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EXHIBIT

1532 PINE STREET, PHILADELPHIA.







# SECOND ANNUAL REPORT

OF THE

## STATE BOARD OF HEALTH

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### NOTE.

Legislative permission for the printing of this report was not accorded until near the close of the session of 1887. The reports of the other departments, the printing of which had been previously authorized, naturally took precedence, and thus further delay was entailed. The Board hopes in future to be able to publish its reports with reasonable promptness.

OF THE

### COMMONWEALTH OF PENNSYLVANIA.

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TRANSMITTED TO THE GOVERNOR, DECEMBER 1, 1886.

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HARRISBURG:

EDWIN K. MEYERS, STATE PRINTER.

1887.



**EXECUTIVE DOCUMENT,**

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**RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN  
ITS ANNUAL REPORT.**

[Adopted July 2, 1885.]

*Resolved,* That no papers shall be published in the Annual Report of this Board except such as are approved for the purpose of such publication by a majority of the members of the Board, and that any statement shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts reported, and the opinions expressed.





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# REPORT

OF THE

# STATE BOARD OF HEALTH.

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COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 1532 PINE STREET,  
PHILADELPHIA, *December 1, 1886.*

To His Excellency ROBERT E. PATTISON, *Governor :*

SIR : In compliance with the provisions of section ten of the " Act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth," approved June 3d, 1885, I have the honor to transmit the second annual report of the Board for the year ending October 1st, 1886.

BENJAMIN LEE, *Secretary.*



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## PART 1. REPORT AND MI

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## REPORT OF THE SECRETARY.

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### A

TO EDWARD WILLIAM GERMER, M. D.,

*President of the State Board of Health and Vital Statistics of  
the Commonwealth of Pennsylvania :*

SIR—In accordance with article five of the by-laws the Secretary hereby presents a report of his official acts during the year ending October 1, 1886.

The first year of any new department of governmental work must necessarily be, to a great extent, preparatory, experimental and constructive. It is not to be expected that a State Board shall spring, Minerva-like, full armed, from the brain of the legislative Jove. It would be the preference of the Secretary, therefore, not to call attention to the work accomplished during the first few months of the existence of the Board, but unobtrusively to pursue the labor of educating the people and their public servants in the practical details of sanitary science until the little leaven shall have leavened the whole lump. But the American people are proverbially impatient of results. Even before its numbers were complete the Board began to be inquired of as to what it was doing to justify its establishment. A *resumé* of its labors up to the present time is therefore not uncalled for.

In brief, it has established friendly relations, and the interchange of ideas and results with the National health authorities, the State boards of all other States of the Union, and of Canada, and the health bureaus of many European countries. It has communicated officially with the boards of health, sanitary committees, and borough councils of all cities and boroughs in this State. It has been the means of forming boards of health in places where they did not exist, and of aiding those already formed to systematize and enforce their regulations. It has devised a model ordinance on sanitary matters for the guidance of all municipal authorities. It has drawn up a set of model rules for boards of health, including full instructions for the establishment of special hospitals for emergencies, which may be adopted by any board existing, or about to be formed, with such modifications as local circumstances, charter provisions, or previous legislation may require. It has formulated circulars containing precautions against cholera and small-pox, and regulations for preventing bone boiling establishments, slaughter houses, and other offensive industries from becoming sources of danger to the public health, and has distributed these to all city and borough

councils, to all superintendents and teachers of public schools, to all jails and charitable institutions, to all newspapers, to all physicians, to all clergymen, to all judges and supervisors throughout the State, and to upwards of a thousand leading manufacturing firms in the city of Philadelphia. In its distribution to public schools and charitable and reformatory institutions it obtained the kind coöperation of the Superintendent of Public Instruction and the "State Board of Lunacy and Charities," which it desires gratefully to acknowledge. It has made inspections of the water-supplies of two cities and one borough at the request of the councils of the same. It has made inspections of aggravated nuisances existing on the outskirts of three large cities and several boroughs at the request of the boards of health or councils of the same, the nuisances being beyond their own jurisdiction. It has successfully prosecuted and lodged in jail an individual who was poisoning the air of a lovely village for the sake of compelling his neighbors to buy his property. It has divided the State into inspection districts and appointed inspectors for the same. It has instituted an inspection of the mining regions of the State with a view to improving their sanitary condition. It has investigated numerous outbreaks of contagious disease in different parts of the State, personally or through its inspectors, including two of small-pox, both of which, with the prompt and efficient aid of the local authorities, assisted in one instance by the board of health of Philadelphia, were successfully nipped in the bud. It has communicated with the officers of railroad and other transportation companies in regard to the transmission of infected passengers or goods; has appointed special inspectors on such lines of travel, and authorized the destruction of several lots of foul clothing found upon their premises. It has caused scientific reports to be made of outbreaks of epidemic disease in the State, particularly that at Plymouth, Luzerne county. It has carefully watched the importation of foreign rags and insisted on their disinfection before being sorted by the operatives. It has sent delegates to the meetings of the American Public Health Association, and the annual conference of State Boards of Health, and contributed material to their transactions. It has made inspections of the sanitary conditions of six soldiers' orphan schools. It has devised forms for the registration of marriages and of practitioners of medicine and surgery, and distributed them to all prothonotaries and clerks of orphans' courts throughout the State. It has carefully inspected the quarantine system of the Delaware river and bay, and corresponded upon the subject with the National authorities. It has, by personal interviews and correspondence, consulted with State and county legal officers in order to determine its own exact status and powers. Its committees are now at work upon the following subjects, viz: Preparing a compendium of the laws of the State on all matters affecting the lives and

health of her citizens, preparing a system of organization for rural boards of health, arranging plans for the thorough investigation of all public institutions and schools, and preparing circulars on all contagious diseases. It has prepared for the press and has ready for distribution its first annual report. Finally, it has held, in the city of Philadelphia, a sanitary convention, opened by his Excellency, the Governor of the Commonwealth, presided over by the distinguished provost of the University of Pennsylvania, attended by representatives of State Boards of Health and eminent sanitarians from all parts of the country, before which essays of the deepest interest were read. It has now established an official organ, through whose columns it purposes to give these valuable papers, with other similar information to the public, and which, under the efficient editorial supervision of the chairman of its committee on preventable diseases, a gentleman of long journalistic experience, it believes will be a most important instrument in fulfilling the imperative duty imposed upon it by law, *"to disseminate information upon these and similar subjects among the people."*

It will be seen that the record more than justifies the assertion made in the first report of the Secretary, after a brief three months' survey of the field that, "it is evident that the first and most pressing want of the State, from a sanitary point of view, is the organization of boards of health in the rural districts." Indeed so urgent and so numerous have been the calls upon the Board to perform duties which properly devolve upon local boards in the way of the abatement of purely local nuisances—duties which it cannot decline, because it constitutes the only legal bulwark between the people and conscienceless or ignorant poisoners of the people's air and food and water—that other functions, which are more distinctively its own, such as Registration of Vital Statistics and the dissemination of information upon sanitary subjects, have been compelled to remain somewhat in abeyance. The development of the former of these two subjects, however, has also been retarded by the want of legislation, which shall determine certain of the essential details of execution, and make attention to them obligatory upon the officers to whom they are assigned, while, at the same time, it assures a proper remuneration for the performance of such duties. In regard to the latter, the Board has from the first recognized the immense value of the public press as a means of conveying instruction upon these vital topics to the great mass of the population. It has endeavored so to shape its course as to command the respect of the reputable and influential portion of this wonderful agency for the distribution of knowledge, and whenever it has furnished material for publication, which it deemed of interest and value to the public, it has been met more than half way—entire columns having in numerous instances been devoted to

its sober utterances to the exclusion of lighter and more attractive reading.

It was with a view to securing the active coöperation of this important auxiliary, and at the same time stimulating the public interest in its work at the very outset of its existence, that the Board, last Spring, held in the City of Philadelphia the Sanitary Convention already alluded to. Of this assemblage of sanitarians from all parts of the country, it has been repeatedly remarked by those competent to express an opinion, that no such convention in the United States ever called together a greater number of leading minds in this department of social science, or was favored with so many admirable papers. While the attendance of citizens of Philadelphia was not as large—owing partly to the excessively inclement weather which prevailed during the entire period of the meeting—as the importance of the occasion, the interests of the subjects presented and the reputation of the speakers warranted the Board in anticipating, it was just here that the kindly aid of the daily newspapers was most effective. The scanty audience of five hundred, who came day after day, through pelting storm, to listen to the teachings of these masters in sanitation, was by this means multiplied, in the still hours of the night, to five hundred thousand, and solitary homes in the remotest corners of the State were thus enlightened on subjects essential to their welfare and happiness.

Next to the editors of the public press, no body of men exercise so controlling an influence over the community, and especially over its more influential, intelligent and law-abiding members as the ministers of religion. An effort has therefore been made to enlist their sympathies and active support in favor of that equal ministration to the physical and moral requirements of our nature, which is so conspicuous in the writings of the first great Law-giver and the labors of the second. To this end, a circular has been addressed to every clergyman in the State, and to this document the endorsement of the Bishops of the Roman Catholic, Episcopal and Methodist churches, respectfully solicited by the Secretary, has been most generously and unqualifiedly given.

The necessity of bringing many of the subjects discussed by the Board before the public, in advance of the appearance of the Annual Report, was early felt, and the large mass of valuable papers suddenly placed at our disposal by the Sanitary Convention compelled the immediate adoption of some plan which would insure their early publication in more complete and permanent form than could be expected in the columns of the daily press. The calls which came from all parts of the country for copies of these essays were an additional incentive to avoid further delay.

The Secretary had hoped that an arrangement could be effected

with the State Printer by which a monthly bulletin could be issued from the public printing offices. The Superintendent of Public Printing, however, after a careful consideration of the suggestion, decided that the law governing that department did not authorize such publications, and the idea was reluctantly abandoned.

The executive committee, therefore, concluded to accept the offer of Dr. Joseph F. Edwards to place the pages of the "Annals of Hygiene," a journal already in existence, at the disposal of the Board upon condition of its being designated as the official organ of the board and receiving a certain degree of pecuniary support to compensate for the increased outlay rendered necessary by the enlargement of the journal. The papers of the sanitary convention, as well as other information in regard to the work of the board, are now appearing regularly in each monthly issue, and it is trusted that the people at large will appreciate the effort thus made and give it their hearty support.

As the youngest of the departments of the State government the Board has naturally been compelled to defer to all the others in the matter of priority in the publication of its annual report, and it may thus appear to have been unnecessarily tardy in its compilation. Very few of the reports of other State Boards of Health for the corresponding year, however, appear in advance of our own. It constitutes a volume of three hundred and fifty-six pages, with eight full page maps, two large maps, six plans, six charts, two wood cuts, and twenty tables, with an index. It has been the aim of the executive committee to make it the vehicle not only of recording permanently the official action of the board, but also of bringing together such other information in regard to the sanitary condition of the State as might indicate the urgent necessity for more extended effort to improve it, especially in the important direction of checking the pollution of rivers now almost entirely unprotected, and also of placing before municipal authorities throughout the Commonwealth the results of the experience of the metropolis of the State as a guide to them in arranging the details of sanitary organization and reform.

The history of the Plymouth epidemic of typhoid fever, comprised in three valuable papers, the first by Dr. Pemberton Dudley, a member of the Board, tracing it to its origin in the city of Philadelphia; the second by Dr. Lewis H. Taylor, of Wilkes-Barre, detailing its rise and progress, and pointing out its local cause by a process of inexorable logic, and the third by Dr. Morris Stroud French, of Philadelphia, one of the physicians sent by the citizens' relief committee of Philadelphia to aid the terror stricken inhabitants, showing to the last cent the amount of the expenditures incurred in the care of the sick, constitutes at once a most valuable contribution to the history of epidemics and an irrefutable argument in favor of immediately instituting a thorough sanitary organization throughout the State, and of jealously guarding

all sources of public water-supply as measures of simple economy, entirely apart from any humanitarian consideration.

The Secretary congratulates the board on the harmonious manner in which it has been enabled to work through, and side by side, with local boards of health wherever the public health has been so seriously threatened as to call for its interference. So far from any feeling of petty jealousy having manifested itself on the part of local authorities, the officers of the Board have been welcomed with open arms, and their advice gladly accepted and promptly acted upon. To this fact it is doubtless to be attributed that several very promising epidemics of typhoid fever which might have repeated the sad story of Plymouth, such as those at West Elizabeth and South Pittsburgh, have been confined within reasonable limits and cut short.

The following leader from the *Pittsburgh Times* of July 30, shows that the efforts of the board to seek out the cause and stay the ravages of these epidemics were not unappreciated :

“IT HAS PROVED ITS RIGHT TO BE.

“The service rendered by the State Board of Health to the people of West Elizabeth in their affliction by the outbreak of fever is an illustration close to home of the usefulness of that organization.

“In such cases people are likely to lose their heads and to need, above everything, directions as to what they should do. They call meetings and discuss the perils, but disperse as undecided as when they assembled. The local doctors are usually busy with the sick and have little time to give counsel as to sanitary arrangements. Besides that, they are pretty sure to differ as to the origin and nature of the pestilence, and as to the best means of suppressing it. The State Board stepping in with a system of rules concerning the closing of wells and preparations of hospital accommodations is welcomed as a succorer, and its instructions are the means of restoring confidence and leading to intelligent treatment of the danger.

“The Board has hardly reached the end of the first year of its existence, but what it has done, as at Elizabeth and at places still nearer Pittsburgh, in abolishing nuisances perilous to health, is sufficient argument for its right to be and to be amply supported.”

In compliance with Article V of the by-laws, which requires the Secretary to accompany his report with the recommendation of such measures as he shall deem necessary for the preservation of the public health and the faithful execution of the law, the Secretary would respectively suggest the expediency of the following legislation :

*First.* Such amendments of the acts of Assembly of May 23, 1874, and of April 3, 1851, as shall make it obligatory upon, and not optional with, the councils of cities and boroughs to assume and perform

the important powers and duties conferred upon and assigned to them as protectors of public health.

*Second.* The enactment of a law making it the duty of certain officers of every township in the Commonwealth to associate themselves together as a board of health of such township, and determining the powers and assigning the duties of such boards.

*Third.* The passage of a supplement to the act of Assembly of June 3, 1885, creating a State Board of Health, making it the duty of all clerks of orphans' courts to report to the Central Bureau of Vital Statistics at Harrisburg, at such times as the State Board of Health shall determine, the marriages for which they shall have issued licenses, with such facts in regard to the contracting parties as the State Board of Health may call for; also, making it the duty of all Prothonotaries to report to said Bureau, at such times as the State Board of Health shall determine, the names of practitioners of medicine and surgery, with such facts in regard to them as the State Board of Health may call for, and also making it the duty of the commissioners of such county to recompense said officers for the performance of such duties in the same manner and in the same amount as is done for the performance of similar acts of record and registration, and

*Fourth.* The passage of a supplement to the act of Assembly of June 3, 1885, creating a State Board of Health, making the violation of, or failure to obey, an order or regulation of the Board a misdemeanor, and also making the cost and expense of abating and removing a nuisance a lien upon the property. Both of these provisions are contained in the law authorizing the creation of boards of health in cities, and the failure to place them in our act has been the cause of serious inconvenience to us in effectively discharging the duties assigned to us.

The Secretary had the honor to represent the Board as *ex-officio* delegate at the annual conference of State Boards of Health at Toronto, October 4-8, and was ably seconded by Drs. Germer and Engelman, who were also present in a representative capacity.

Twenty-three States, and all the provinces of Canada, except Manitoba, were represented. As the name of this organization, implies, it has for its object consultation and comparison of views on practical questions connected with health work, between those specially intrusted with such work in the various States. As a full report of the questions presented and discussions had thereon will be ready for distribution at an early day, I shall only give the conclusions arrived at upon some points which are likely to prove specially interesting to the Board.

The State Board of Health of Michigan submitted the question of the transportation of dead bodies in the following resolutions:



*“Resolved,* That the bodies of persons dead from the following named diseases should not be transported outside the jurisdiction of the health authorities in which the deaths occur: Diphtheria, scarlet fever, small-pox, cholera, yellow fever and typhus fever.

*“Resolved,* That persons sick with diphtheria, scarlet fever, small-pox, cholera, yellow fever, typhus fever, measles or whooping cough, should not be transported outside the jurisdiction of the health authorities in which the sickness occurs.

*“Resolved,* That bodies of persons dead from diseases other than those mentioned in resolution No. 1, should not be transported, except by the permission of the health officer of the locality in which the deaths occur; and in case of communicable diseases, other than those named in resolution No. 1, notice should be given to, and whenever practicable, permission should be received from, the health officer of the locality to which it is desired to take the body.

*“Resolved,* That a permit for the removal of a body, dead from the above-named diseases, should be given only on assurance of its having been properly embalmed, or suitably prepared by being surrounded with disinfectants, or incased in a hermetically sealed case.”

No formal action was taken on the resolutions, as most of the State Boards and leading lines of transportation had already taken advanced action in this direction, but after full discussion by some of the representatives who had had large experience in dealing with the subject, I have embodied what seems the safest and most practicable views in the rules of this Board:

#### QUESTIONS FOR DISCUSSION.

The State Board of Health of Missouri submitted this question: “How shall county boards of health be organized, managed and directed in order to secure the State Board, if such exist, the most efficient help and coöperation in general sanitary work; the reporting and proper registration of vital and mortuary statistics, and the enforcement of laws regulating medical practice in States where such enactments exist?”

The discussion was opened by Dr. Hewitt, of Minnesota, who detailed his experience in developing from a small beginning the excellent health service now existing in almost every township in that State. He did not believe it practicable to embrace more territory under the jurisdiction of a local board of health or health officer than a township, and he had found that lay members of the local boards took quite as active and intelligent interest in the work as did the medical members. The monthly bulletin issued by his board had served an excellent purpose in diffusing knowledge and in stimulating to better work.

The State Board of Health of Missouri also submitted the following:

"Upon what basis or common agreement, may boards meet that are empowered to administer and enforce acts to regulate medical practice and, indirectly, education in the several States?"

"Is it feasible and wise for them to unite in a uniform policy toward medical colleges, and in the establishment of a common standard of recognition of such schools, in regard to length and number of courses of study required for graduation, preliminary requirements, percentage of graduates to matriculates and other details of collegiate medical instruction?"

The discussion was opened by Dr. Rauch, of Illinois, who gave a brief resumé of the largely successful pioneer work that had been done in that State in the suppression of empiricism, and in elevating the standard and improving the methods of medical education. The firm and fearless enforcement of a well-drawn law had done more in this direction than all the learned addresses and high sounding resolutions of medical societies had done or could do. Nor had the influence on medical schools been confined to those located in Illinois. As a diploma of a college is not recognized as evidence of qualification to practice medicine in that State, unless the course of study and requirements for graduation in such college come up to the standard fixed by the State Board, it has materially affected and bettered the system of medical education throughout the entire country. The advantage of coöperation between the various States would be quite as great in this as in other branches of our work.

SUBMITTED BY KENTUCKY.

The State Board of Health of Kentucky submitted, among other questions, the following:

"What have been the actual and practical results secured, outside of large cities and towns, in preventing the spread of scarlet fever, measles, diphtheria and typhoid fever? and how is the coöperation of the medical profession and general public best secured in such work?"

Dr. Baker, of Michigan, opened the discussion. He thought no informed person could doubt the good results in his State in preventing and restricting the diseases named. He gave the statistics, extending over a series of years, as convincing evidence on this point. Among the influences used to secure the coöperation of the profession and public had been the sanitary conventions, weekly bulletins, preventive disease circulars, and reasonable compensation for efficient work by local health officers.

The State Board of Health of Michigan proposed the following resolution last year, with the request that it lie over for the careful consideration of members until this meeting:

"*Resolved*, That it now seems probable that progress can be made

in the restriction of that disease, which in this country causes more deaths than any other disease, namely, consumption, by declaring to the people that care should be taken to destroy or disinfect the sputa from persons suffering from pulmonary consumption."

After careful consideration, the resolution received the unanimous indorsement of the conference.

You will probably remember that a resolution was offered last year by the State Board of Health of Wisconsin, urging the disinfection of the stools of typhoid fever patients as a means of the preventing the spread of that disease. No action was taken on this, for the reason, as was stated, that the importance of such disinfection was already sufficiently understood and practiced. I mention this conclusion because I do not believe it to be true as to this State.

#### RESTRICTING THE SPREAD OF DISEASE.

As chairman of the committee on the subject, Dr. Bryce, of Ontario, made an interesting report on "Inter-State Notification and Coöperation in Preventing the Spread of Infectious Diseases." After fully understanding the import of each point, the following series of resolutions were adopted as an agreement between the boards represented :

"Whereas It is necessary for the protection and preservation of the public health, that prompt information should be given of the existence of cholera, yellow fever and small-pox; be it

*Resolved*, That it is the sense of the National Conference of the State Boards of Health, that it is the duty of each State, provincial and local board of health in any locality in which said disease may at any time occur, to furnish immediately information of the existence of such disease to boards of health of neighboring states and provinces, and to the local boards in such States as have no State board.

*Resolved*, That upon rumor or report of the existence of pestilential disease, and positive definite information thereon not being obtainable from the proper health authorities, this conference recommends that the health officials of one State shall be privileged and justified to go into another State for the purpose of investigating and establishing the truth or falsity of such reports.

*Resolved*, That whenever practicable, the investigations made under the preceding section, shall be done with the coöperation of the State or local health authorities.

*Resolved*, That any case which presents symptoms seriously suspicious of one of the aforesaid diseases, shall be treated as suspicious, and reported as provided for in cases announced as actual.

*Resolved*, That any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

*“Resolved,* That any case respecting which efforts are made to conceal its existence, full history and true nature shall be deemed as suspicious, and so acted upon.

*“Resolved,* That in accordance with the foregoing resolutions, the Boards of Health of the United States and Canada, represented at this conference, do pledge themselves to an interchange of information as herein provided.”

At the conclusion of the most interesting and profitable session the conference has ever held, it adjourned to meet in Washington, during September, 1887.

The number of written communications received by the Secretary during the year has been nine hundred and fifteen (915).

The number of written communications sent by the Secretary during the year has been ten hundred and sixty-three (1,063).

The number of volumes purchased for the library of the board during the year has been eighteen (18).

The number of volumes presented to the board during the year has been two hundred and three (203).

The number of pamphlets presented to the board during the year has been fifty-three (53).

**Stationery received by the Board for the Year ending the first Monday of June, A. D. 1887.**

- 1 ream Carew legal cap paper, red lined, 12 pounds.
- 1 ream Carew cap, broad ruled, 16 pounds.
- 2 reams Carew, letter ruled, 12 pounds.
- 2 reams Carew note, commercial ruled, 8 pounds.
- $\frac{1}{2}$  dozen boxes Cramer's finest note paper and envelopes, 2 quires and 2 packs envelopes to box.
- 5 quires cyclostyle paper, \$1 00 per quire.
- 2 reams envelope paper, 20x25, 40 lbs.
- 1 ream manilla wrapping paper, 24x36, 40 lbs.
- 1 ream manilla wrapping paper, 24x36, 70 lbs.
- $\frac{1}{2}$  dozen sheets Reynolds' bristol board, 3 sheet demy.
- 1 dozen scratch memoranda, 6x9.
- 1 dozen sheets blotting board, best quality, white.
- 1 dozen sheets blotting board, best quality, blue.
- 1 dozen sheets blotting board, best quality, pink.
- 2 Muckle's envelope openers.
- $\frac{1}{2}$  dozen Mark Twain scrap books, 10x12, thick.
- 4 dozen paste-board document boxes, 4x4 $\frac{1}{2}$ x10, with handles, \$4 50 per dozen.
- 1 cyclostyle ink roller, \$1 50.
- 4 bottles cyclostyle ink, 60 cents per bottle, black.
- 2 spring rubber stamps, words to order.

- 1 box Leon Isaacs & Sons' stub pens.
- 1 box Esterbrook's broad pointed pens.
- 1 box Esterbrook's easy writer pens.
- 1 dozen Faber's pen holders.
- 1 dozen A. W. Faber's red and blue pencils.
- 2 dozen Faber's black lead pencils.
- $\frac{1}{2}$  box Bixby's mucilage.
- 2 bottles carmine ink.
- 6 pints combined copying and writing ink, black.
- 6 pints Carter's writing fluid.
- 1 blotter case for desk use.
- 2 desk rulers.
- 2 ruling pens.
- 2 glass paper weights.
- 3 letter clips with board, 1 letter size, 2 note size.
- 3 large spools red tape.
- 2 dozen Alvah Brushnell's paper weights and clips.
- 3 Faber's perfect long bevel lead pencil sharpeners with handles.
- $\frac{1}{4}$  dozen pyramid pins.
- 4 gross Faber's rubber bands, assorted.
- $\frac{1}{4}$  dozen Rogers' steel erasers, double edge, combined knife and eraser.
- $\frac{1}{4}$  dozen Wostenholm's knives, 4 blades.
- $\frac{1}{4}$  dozen Peters Bros.' scissors, 6 inch blade.
- 1 Waterman ideal fountain pen.
- 1 Carter fountain mucilage stand and brush.
- $\frac{1}{4}$  dozen paper cutters.
- 2 dozen balls hemp twine.
- 4 boxes small paper clamps.
- 1 Worcester's Unabridged Dictionary.
- $\frac{1}{4}$  dozen virgin rubbers, small size.

**Printed matter furnished by the Superintendent of Public Printing during the year ending October 1, 1886.**

The following is a list of printed matter and stationery furnished to the Board by the Superintendent of Public Printing, W. Hayes Grier, Esq., on requisition of the Secretary, and in accordance with forms arranged by him :

- 5,000 blank forms for registration of marriages, with paper cover.
- 500 copies constitution and by-laws State Board of Health.
- 200 circulars, regulations of traffic and travel, single sheets.
- 1,000 State Board large envelopes.
- 1,000 unruled sheets letter paper, headed.
- 5,000 blank forms for registration of practitioners of medicine and surgery.
- 500 slips to Constitution.

- 500 additional blank forms to a sheet, perforated, for registration of physicians.
- 500 single sheets white unruled legal cap with heading.
- 2,000 legal envelopes with heading.
- 5,000 large envelopes, brown, with address to Superintendent Vital Statistics.
- 500 No. 12 envelopes for 1883, with State Board of Health and State arms.
- 1,000 sheets white letter paper with heading.
- 1,000 large white envelopes with heading.
- 500 circulars on traffic and travel.
- 2,000 regulations in regard to the abatement and removal of nuisances.
- 3,000 copies annual report of Board.
- 6,000 circulars to clergymen.
- 500 postal cards with heading.
- 1,000 regulations for slaughter houses.
- 1,000 notices of Sanitary Convention.
- 2,000 permits for bone boiling establishments.
- 500 large brown envelopes with heading.
- 5,000 large tinted lithographed envelopes.
- 5,000 small tinted envelopes, lithographed.
- 1,000 white Irish linen letter paper, single sheets, lithographed heading.
- 500 sheets white Irish linen, unruled note paper, lithographed heading.
- 3,000 copies model ordinance for cities and townships.
- 5,000 envelopes, manilla.
- 1,000 sheets white Irish linen note paper, lithographed heading.
- 5,000 sheets white Irish linen letter paper with heading.
- 5,000 tinted lithographed envelopes, large size.
- 5,000 tinted lithographed envelopes, note size.
- 500 extra copies Dr. Hamilton's paper on the sanitary condition of Harrisburg.
- 500 copies minutes of meetings of State Board of Health with report of Secretary, in pamphlet form.
- 40,000 tickets for Sanitary Convention.
- 37,000 copies programme of Sanitary Convention.
- 5,000 copies Model Rules for Boards of Health.
- 500 copies Minutes of Board with report of Secretary, for office use, balance of one thousand.
- 5,000 Programmes Sanitary Convention.
- 5,000 large manilla envelopes.
- 2,000 complimentary stickers.
- 500 blank forms of instructions to inspectors, headed.
- 1,000 manilla clamped envelopes for annual report.
- 1 letter book.
- 1,000 postal wrappers.
- 2 BOARD HEALTH.

2,000 notices change of address.

1,000 postal card acknowledgments.

**Additions to the Library.**

The following is a catalogue of the books and pamphlets added to the library of the Board during the year :

**BOOKS.**

Fourth Annual Report of the Provincial Board of Health of Ontario.  
First Annual Report of the State Board of Maine.  
Annual Statement of the Guardians for the Relief and Employment of the Poor of Philadelphia, 1886.  
Registration Report of New Hampshire, 1884.  
Fifth Annual Report of the State Board of New Jersey.  
Transactions of the New York Academy of Medicine, Vol. IX.  
Report of the Health Officer of District of Columbia, 1885.  
Vital Statistics, by Wm. Farr.  
Annual report of Health Commissioners of St. Louis, 1885-'86.  
Fifth Annual Report of Board of Health of New Hampshire, 5 copies.  
Report and papers of the American Public Health Association, Vol. XI.  
Transactions of the Medical Association of Alabama.

**Second Geological Survey of Pennsylvania.**

A. Horticultural Sketch of Geological Explorations.  
AA. Anthracite Region. Report 1.  
AA. Atlas Northern Anthracite Field. Part 1.  
AA. Southern Anthracite Field. Vol. 1.  
AA. Atlas Eastern and Middle.  
AC. Coal Mining.  
AC. Atlas to.  
A<sup>2</sup>. Coal Waste.  
B. Mineralogy.  
C. Iron Ore Belts—York and Adams Counties.  
CC. Magnetic and Micaceous Ore Belts—York, Adams, Cumberland and Franklin Counties.  
CCC. Lancaster County.  
CCC. Lancaster County Maps.  
C<sup>4</sup>. Chester County.  
C<sup>5</sup>. Delaware County. Part 1.  
C<sup>6</sup>. Philadelphia Belt.  
D. Brown Hematite Ore Ranges—Lehigh County.  
DD. Lehigh District.  
D<sup>2</sup>. Lehigh and Northampton. Vol. 1.  
D<sup>3</sup>. Berks County. Part 1. Vol. 2. Lehigh, Northampton and Berks.  
D<sup>4</sup>. Atlas to. Volume 1 and 2.

- D<sup>5</sup>. Adams, Franklin and Cumberland Maps. South Mountain Sheets.  
A 1, A 2. B 1, B 2.  
E. Azoic Rocks. Part 1.  
F. Fossil Ore—Juniata County Valley.  
F<sup>2</sup>. Perry County. Part 1.  
G. Bradford and Tioga.  
GG. Lycoming and Sullivan.  
GGG. Potter County.  
G<sup>4</sup>. Clinton County.  
G<sup>5</sup>. Susquehanna and Wayne Counties.  
G<sup>6</sup>. Pike and Monroe.  
G<sup>7</sup>. Wyoming, Lackawanna, Luzerne, Columbia, Montour and North-  
umberland Counties.  
H. Clearfield and Jefferson District.  
HH. Bituminous Coal Fields—Cambria and Somerset district. Part 1.  
Cambria.  
HHH. Somerset District—Somerset. Part 2.  
HHHH. Indiana County.  
H<sup>5</sup>. Armstrong County.  
H<sup>6</sup>. Jefferson County.  
H<sup>7</sup>. Clearfield County. Revised.  
I. Venango County District.  
II. Oil Well Records and Levels.  
III. Oil Region Maps and Charts.  
14. Warren County Oil Wells.  
K. Bituminous Coal Fields—Greene and Washington Counties District.  
KK. Fayette and Westmoreland District.  
KKK. Ligonier Valley.  
K<sup>4</sup>. Monongahela River Mines.  
L. Coke Manufacture—Fayette and Westmoreland.  
M. Laboratory of the Survey.  
MM. Chemical Analyses—Harrisburg.  
M<sup>3</sup>. Chemical Analyses—Harrisburg.  
N. Levels above Tide.  
O. Catalogue Museum.  
OO. Catalogue Museum.  
P. Coal Flora Text. Volumes 1 and 2.  
P. Coal Flora Text and Plates. Volume 3.  
P. Coal Flora Atlas.  
PP. Permian Flora.  
P<sup>3</sup>. Beecher and Hall.  
Q. Beaver Valley—South Butler.  
QQ. Lawrence County—Ohio Lane.  
QQQ. Mercer County.  
Q<sup>4</sup>. Erie and Crawford.



R. McKean County.

R. McKean County Maps and Charts.

RR. Cameron, Elk and Forest Counties Maps and Charts.

T. Blair County.

T. Blair Atlas.

T<sup>2</sup>. Bedford and Fulton.

T<sup>3</sup>. Huntingdon County.

T<sup>4</sup>. Centre County.

5. Northern Butler.

55. Clarion County.

X. Geological Atlas of Counties.

Z. Terminal Moraine.

1. Grand Atlas. Division 2. Anthracite Coal Fields. Part 1. 1884.

2. Grand Atlas. Division 1. County Geological Maps. Part 1. 1885.

3. Grand Atlas. Division 2. Anthracite Coal Fields. Part 2. 1885.

4. Grand Atlas. Division 4. Petroleum and Bituminous Coal Fields. Part 1. 1885.

5. Grand Atlas. Division 4. South Mountain and Great Valley Topographical Maps. Part 1. 1885.

6. Grand Atlas. Division 5. Central and South-Eastern Pennsylvania. Part 1. 1885.

Annual Report of the National Board of Health, 1883.

Report of the Proceedings of the Illinois State Board of Health. Annual meetings, Springfield, January 21-26, 1886. 10 copies.

Annual Report of the National Board of Health for the year 1884. 1 copy.

Health Officer's Annual Report, Philadelphia, 1884. 4 copies.

National Conference of State Boards of Health. 9 copies.

State Board of Health of Michigan, 1884. 1 copy.

Report of the Proceedings of the Michigan State Board of Health. Regular meeting, January 12, 1886. 1 copy.

Medical Society of New Jersey Transactions, 1885.

Annual Report of the Health Department of the City of Baltimore to the Mayor and City Council of Baltimore, for the fiscal year ending December 31, 1885. 1 copy.

Moisture and Dryness of the Analysis of Atmospheric Humidities in the United States. 1 copy.

Ordinances and Joint Resolutions of the City of Philadelphia. 1 copy. 1875.

Ordinances City of Philadelphia, 1881, 1882, 1883. 1 copy each.

Ordinances and City Solicitors' Opinions. 1 copy. 1884.

Twelfth Annual Report of the State Board of Health of Michigan. 1 copy. 1884.

## PURCHASED.

Cyclopædia of the Practice of Medicine, Hygiene and Public Health.  
2 vols. \$10 00.

Asiatic Cholera. Wendt, \$2 00.

One copy Boston Main Drainage, \$1 40.

Public Health—the Lomb prize Essays of the American Public Health  
Association, Washington, D. C., 1885—\$1 00.

The New Charter City of Philadelphia. 1 copy. 25 cents.

Presented, 113; purchased, 6; total, 119.

## PAMPHLETS.

First Annual Report of the Board of Health of Newark, N. J.

Third Annual Report of the Board of Health of Paterson, N. J.

Report on the Quarantine System of the St. Lawrence, 1886.

Manual of Laws Relating to the Public Health of Michigan, 1880.

Resuscitation of the Drowned.

Various Forms of the Health Department District of Columbia.

Conference of Representatives of State Boards of Health.

The Time of the Greatest Prevalence of Each Disease.

The Allegheny Water Supply; Cholera and Typhoid Fever.

Report of the Secretary of the Board of Health of Scranton.

Thirteenth Annual Report of the Health Department of Cleveland.

Eighth Annual Report of State Board of Health of Rhode Island.

Disinfection and Individual Prophylaxis Against Infectious Diseases.

Healthy Homes and Food for Working Class.

The Sanitary Conditions and Necessities of School Houses and School  
Life.

The Preventable Causes of Disease, Injury and Death in American  
Manufactories and Workshops, and the Best Means and Appliances  
for Preventing and Avoiding Them.

Annual Health Report of Richmond, Va., 1885.

Heredity and Education.

Ohio State Sanitary Convention.

Abstract of the State Laws, Maine.

Fifth Annual Report Board of Health of Detroit.

Report on the Sanitary Condition of the Cambridge Improvement  
Act District. 2 copies. Forty-fourth Report to the Legislature of  
Massachusetts.

The Tenth Annual Convention of the Directors of the Poor of Pennsyl-  
vania, 1884.

Coast defences against Asiatic cholera, 11 copies.

Summarischer Geschäftsbericht, der Sanitäts Commission des Gemein-  
derathes der Stadt Bern. Dr. Albert Wytenbach.

Statistische Tabellen und Tafeln über die Mortalitätsverhältnisse der  
Stadtgemeinde Bern in der Zeitperiode von 1811 bis 1880. Dr. Al-  
bert Wytenbach.

- Statistikder Todesfälle in Bern, 1871-'75. Dr. Earnest Scharer.  
Bericht über die Typhus Epidemic in Bern, winter 1873-'74. Dr. Adolf Zeigler.
- The Australasian Sanitary Conference of Sydney, N. S. W., 1884, 1 copy.  
Wood Pavement Board, New South Wales, 1884.
- Report Inspector of Public Charities. 3 copies. 1883-'4-'5.  
Report Government Asylums for the Infirm Destitute. 1 copy. 1883-'4.  
Twenty-seventh Annual Report from the Register General on Vital Statistics. 1 copy. 1883. Jamaica.
- Report of the Inspector General of the Insane. 1883-'84. 2 copies.  
Report of the State Children's Relief Department. 3 copies. 1883-'85.  
Proceedings at the Sanitary Convention, held at Ypsilanti, Michigan, June 30th and July 1st, 1885.
- Report Medical Officer of Health of the City of Liverpool. 1 copy.  
Laws, Ordinances, Rules of the Borough of Carlisle, Pa. 1 copy.  
Congressional Directory, 1886. 1 copy.
- Official Register of Physicians and Midwives, Illinois, 1886. 1 copy.  
Report of the Board of Health of the City of Reading, 1885. 2 copies.  
Ninth Report State Board of Health, Wisconsin. 2 copies.  
Ninth Annual Report of the Board of Health of the State of New Jersey and Report of Bureau of Vital Statistics.
- First Annual Report of the State Board of Health of Kansas. 5 copies.  
Report of the Secretary of the State Board of Health of New York. 1 copy.
- Thirteenth Annual Report of the Board of Health of the City of New Haven. 1 copy.
- Nineteenth Annual Report of the Health Department of Cincinnati. 1885. 2 copies.
- Report on a Public Water Supply for the City of Memphis. 1886. 1 copy.  
Annual Report of the Board of Health of the City of Toledo. 1 copy.  
Annual Report of the Board of Health of the City of Taunton, 1885.  
Second Annual Report of the Metropolitan Board of Health of the State of New York, 1867.
- Third Annual Report of the Metropolitan Board of Health of the State of New York, 1868.
- Fourth Annual Report of the Metropolitan Board of Health of the State of New York, 1869.
- Proceedings and Debates of the Third National Quarantine and Sanitary Conventions, held in the City of New York from April 27th to the 30th, 1859.
- Annual Report of the Metropolitan Board of Health of 1866.  
The Cholera Epidemic of 1873 in the United States.  
Value of Sanitation in its National Aspect as Compared with Other Public Interests. 1 copy.  
The Germ Theory of Disease.

## Report of the Secretary as Treasurer.

The Secretary begs leave respectfully to report, that

There was remaining a balance in the Treasury, Oct. 1, 1885, of . . . . .	\$1,313 57
There was received from the State Treasurer, Dec. 3, 1885, the quarterly appropriation of . . . . .	1,250 00
March 3, 1886, the quarterly appropriation of . . . . .	1,250 00
June 3, 1886, the quarterly appropriation of . . . . .	1,250 00
And Sept. 3, 1886, the quarterly appropriation of . . . . .	1,250 00
<b>Making a total of receipts of . . . . .</b>	<b>\$6,313 57</b>
That there have been expended up to Oct. 1, 1886, for traveling and other necessary expenses of members while on duty, . . .	\$698 20
For postage, . . . . .	188 42
For books and maps, . . . . .	173 60
For furniture and stationery, . . . . .	25 17
For expressage, . . . . .	37 50
For telegrams, . . . . .	18 09
For scientific reports, . . . . .	425 00
For inspections, . . . . .	490 30
For legal opinions, . . . . .	20 00
For type writing, . . . . .	27 11
For printing in Annals of Hygiene, . . . . .	800 00
For subscription to Sanitary Convention, . . . . .	200 00
For subscription in American Publication Health Association, . .	5 00
For vaccination, . . . . .	52 25
For expense in moving office, . . . . .	10 00
For clerical services, . . . . .	790 75
For services of janitor, . . . . .	22 00
For salary of secretary, . . . . .	2,000 00
<b>Making a total of expenditures of . . . . .</b>	<b>5,983 3</b>
<b>And leaving a balance in the Treasury, Oct. 1, 1886, of . . . . .</b>	<b><u>\$330 18</u></b>



## MINUTES OF THE BOARD.

Minutes of a Special Meeting, January 20, 1886.

A special meeting of the Board was held Wednesday, January 20, 1886, at the Executive Office, at 2:30 P. M. on the call of the President.

Special, January 20,  
1886.

Present—Drs. Dudley, Engelman, Edwards and Lee, and Mr. Hering. Dr. Edwards was called to the chair.

The reading of the minutes was, on motion, dispensed with.

The secretary stated the object of the meeting to be the consideration of an ordinance, which had been presented before the city councils of Philadelphia, to prevent the spread of contagious diseases in that city. The Secretary, on request, read the entire ordinance.

Ordinance to prevent the spread of contagious diseases in Philadelphia.

While the general scope of the ordinance appeared to be admirable, it was thought that certain of its provisions would prove very obnoxious to the public, and would meet with serious resistance, and Dr. Dudley was instructed to communicate this expression of the opinion of the Board to Dr. Trites, the proposer of the ordinance.

Dr. Dudley moved that the Committee on Preventable Diseases, and the Committee on Sanitary Legislation be instructed to prepare, as soon as practicable, a draft of an ordinance for the prevention of the spread of infectious diseases in cities and towns of this Commonwealth, and to communicate copies of said proposed ordinance to the authorities of the same. It was carried.

And in all cities and towns.

The secretary stated that the decision of the place of meeting for the next regular meeting of the Board having been, by resolution of the Board, left to the executive committee, that committee had fixed upon Philadelphia as such place of meeting, and suggested that as the delivery of a popular address before the Board was the special object assigned by the by-laws to that meeting, it might perhaps be well to enlarge this object to the dimensions of a sanitary convention, such as had been held in some of the Western States, with the result of exciting a great interest in sanitary reform in the public mind, and offered the following resolution, which was adopted :

*Resolved*, That a committee of three, of which the chairman of this meeting shall be chairman, be appointed to make such preparations for the regular meeting of the Board, in May, as shall be calculated to arouse an interest in the minds of the public in the work of the Board. The chair appointed Drs. Lee and Dudley as the additional members of the committee.

Dr. Edwards introduced the subject of a journal as the organ of the Board, for the diffusion of information. After considerable discussion, action on the subject was deferred until the regular meeting of the Board. On motion the Board then adjourned.

BENJAMIN LEE, Secretary.

**Third regular.**

**Minutes of Third Regular Meeting.**

The third regular meeting of the Board was held at McCaull's Opera House, Philadelphia, on Wednesday, May 12, 1886, at 9:00 A. M., due notice thereof having been given to all the members by the secretary.

**Minutes of second regular meeting corrected and approved.**

Present—Drs. Germer, Engelman, Dudley, Edwards, Mr. Hering and Dr. Lee. The president in the chair. The minutes having been read by all the members in print the president suggested that any member of the Board having amendments to propose should do so. Mr. Hering desired to correct that portion which stated that he stated that the water department of Philadelphia was in possession of full meteorological data for Eastern Pennsylvania by substituting as follows: "Mr. Hering stated that the water department of Philadelphia has taken rain-fall observations in Eastern Pennsylvania since the summer of 1883, in addition to those taken by the government."

No other correction being offered, the minutes, as corrected, were approved as the minutes of the second regular meeting.

**Minutes of special meeting approved.**

The minutes of a special meeting held January 20, 1886, were read and approved. On motion the Board then adjourned to attend the sessions of the Sanitary Convention until 9:00 P. M. at the same time and place.

**SECOND SESSION.**

**Third regular, Second session.**

Pursuant to adjournment the Board met at 9:00 P. M. The president in the chair. All the members present.

**Secretary's report.**

The secretary presented the following report of his official acts since the last meeting of the Board, including the following subjects:

**Conviction and sentence of Daniel Kerrigan.**

*First.* The successful issue of the first prosecution undertaken by the Board in the trial and conviction of Daniel Kerrigan, of Rosemont, Montgomery county, for maliciously maintaining a nuisance prejudicial to the public health, and the sentence of the offender to one month's imprisonment. On motion the action of the executive officer in this case was approved and the report was accepted and referred for publication in the annual report.

**Travels of Japanese rags.**

*Second.* The measures taken to discover the destination of the cargo of Japanese rags removed from the warehouse in Philadelphia by permission of the board of health of that city, resulting in tracing them across the Delaware river to Camden, N. J.; thence by rail to Elizabeth; thence by the Bound Brook railroad to Lafayette Paper Mills, Spring Mill, Montgomery county,

Pennsylvania. Subsequent steps to prevent the said rags from becoming a source of danger to the public health.

The report was accepted and referred for publication.

*Third.* Reports of inspections of soldiers' orphan schools made under instructions from his Excellency the Governor of the Commonwealth, including investigations into the location and character of the buildings, the condition, capacity and ventilation of the dormitories; the character and condition of the bedding; the condition, quantity and quality of bed clothing; the condition, capacity, lighting and ventilation of school-rooms; the quantity and quality of the food supply; the condition and construction of the privies and drains, and the general health of the pupils. The reports were for four schools: those of McAllisterville, Mercer, Dayton and Jumonville, and one orphanage, that of Butler, under the auspices of the Reformed Church.

Inspections of soldiers' orphan schools.

The reports were accepted and referred for publication.

*Fourth.* A history of the fatal outbreak of trichinosis at Bethlehem, with illustrations of the parasite, as seen in the meat causing the disease and in the deltoid muscle of one of the victims, accompanied by a demonstration of the trichinoscope; accepted and referred for publication.

Trichinosis at Bethlehem.

*Fifth.* A report on the introduction of small-pox at Fairview (Mountain Top), Luzerne county, by Hungarian immigrants, and the arrival shortly previous of the steamship British Prince at Philadelphia with Hungarian immigrants, and a case of small-pox on board. In connection with this subject the secretary submitted the following resolution:

Small-pox at Fairview.  
Small-pox on British Prince.

*Resolved,* That it is the sense of this Board that the Quarantine Station on the Delaware river exists for the protection not of the city of Philadelphia alone, but of the entire State.

Quarantine.

*Resolved,* That this Board recommends to the board of health of Philadelphia, the adoption of a regulation making it obligatory on the surgeons of all ships bringing immigrants to this port to examine all steerage passengers for evidence of vaccination, and in case such evidence is not satisfactory, to vaccinate such passengers at an early period in the voyage, such examination and vaccination to be quite irrespective of the existence or non-existence of small-pox at the port of departure.

Vaccination of emigrants.

*Resolved,* That inasmuch as the period from October 1st to June 1st, is that in which small-pox prevails with the greatest virulence, therefore this Board recommends to the board of health of Philadelphia the observance of the same careful precautions against the introduction of this disease by infected persons, clothing, baggage or cargo, during the season referred to, as are insisted on during the alternate period with regard to yellow fever and cholera.

Quarantine of small-pox.



The report was accepted and referred for publication. On motion of Dr. McClelland, the resolutions were adopted, and the secretary was instructed to transmit a copy of the same to the board of health of Philadelphia.

Inspection of  
county jail at Car-  
lisle.

*Sixth.* A report of an inspection of the county jail at Carlisle, made by the secretary at the request of the board of health of that borough and of the trustees of the Lutheran church, in consequence of nuisances in the shape of filthy cess-pools in the jail yard, which had been the cause of fatal disease in the immediate neighborhood; with the instructions given for the abatement of the nuisance.

The action of the secretary in the premises was sustained, and the report accepted and referred for publication.

Complaint of health  
officer of Williams-  
port.

*Seventh.* A report on a complaint of a nuisance in the shape of a filthy and over-crowded livery stable in the city of Williamsport, from the health officer, Dr. Richter; with the action taken for abatement.

The report was accepted and referred for publication, and the action of the secretary confirmed.

Nuisance at  
Stroudsburg.

*Eighth.* A report on a complaint of a nuisance in the borough of Stroudsburg, in the shape of decomposing matter on the banks of a mill-race, from Dr. N. C. Miller of that place, with action taken.

On motion the report was adopted and referred and the action confirmed.

Nuisance at Monen-  
gahela river.

*Ninth.* A report of a complaint of nuisance existing on the bank of the Monongahela river above Pittsburgh, beyond the jurisdiction of the municipal authorities of Pittsburgh, made by the health officer of that city, with report of inspection of same by the inspector of the Alleghany district, Mr. L. H. Hunter.

The report was accepted and referred.

Pollution of school  
well at Jenkintown.

*Tenth.* A report on a complaint of a nuisance in the shape of pollution of the well of the public school in the borough of Jenkintown, made by the board of health of Jenkintown; with order for abatement.

The report was accepted and referred, and the order was sustained.

Stagnant water at  
Chadd's Ford.

*Eleventh.* A report on a complaint of a nuisance in the shape of stagnant water, at Chadd's Ford, Chester county, by Dr. Henderson Hayward.

Accepted and referred.

Impure water sup-  
ply at Towanda.

*Twelfth.* Report on a complaint of impure water-supply in the borough of Towanda, with a request from the borough council for a visit of inspection by the State Board.

Accepted and referred, and the secretary instructed to make an inspection as requested.

On motion the Board then adjourned to meet at 9 A. M. the following morning.

### THIRD SESSION.

Third regular.  
Third session.

The Board re-assembled at 9 A. M., Thursday, pursuant to adjournment. Present, Drs. Germer, Edwards, McClelland, Engelman and Lee. The president in the chair.

The secretary continued the presentation of his report, which was interrupted by adjournment the evening before.

The *twelfth* item was a report of inspections of vaccine farms, and establishments, made by the president and secretary in accordance with a resolution adopted at the last regular meeting. It included a visit by the president and secretary to the vaccine farms of Dr. H. M. Alexander, at Lancaster county vaccine farm; of a visit by the secretary to the vaccine farm of Dr. Stephen F. Martin, of Brooklyn, Massachusetts; of an interview of the secretary with Dr. Frank P. Foster, of New York, proprietor of a vaccine propagating establishment in West Chester county, New York, and of a visit by Drs. Edwards and Engelman and Mr. Hering to the vaccine propagating establishment of Mr. John Wyeth, at Westtown, Chester county, Pennsylvania.

Inspection of vaccine farms.

The report was accepted and referred for publication.

*Thirteenth.* A report of an inspection of causes of pollution of the Schuylkill river at West Manayunk, made at the request of the Board of Health of Philadelphia, by Medical Inspector Wm. B. Atkinson, M. D.

Pollution of Schuylkill river at West Manayunk.

The report was accepted and referred.

*Fourteenth.* A report on typhoid fever at the State Normal school at Edinboro', Pennsylvania, by J. A. Cooper, principal.

Typhoid fever at Edinboro'.

Report referred for publication.

*Fifteenth.* A report on the water supply of Altoona, by Dr. Charles B. Dudley, member of Board of Health of Altoona.

Water supply of Altoona.

Referred for publication.

*Sixteenth.* A report on the bone boiling works of Wallace Dungan, at Doylestown, made by Medical Inspector William B. Atkinson, M. D.

Bone boiling at Doylestown.

Accepted and referred for publication.

*Seventeenth.* A report on a reported outbreak of small-pox at Mogeestown, Montgomery county, by Medical Inspector Atkinson.

Small-pox at Mogeestown.

Report accepted and referred.

*Eighteenth.* Circulars prepared by the secretary, as follows:

A circular letter to the clerical profession, requesting their aid and coöperation in sanitary work. Adopted and authorized to be printed and circulated. The secretary stated that he had addressed letters to each of the bishops of the Episcopal and Reformed Episcopal and Roman Catholic churches, requesting their endorsement of the foregoing circular, and had received most cordial and encouraging responses from them all. These replies he had caused to be copied in cyclostyle, and had sent one with each circular, as well as a circular on small-pox and one on cholera to each clergyman of those denominations, and to educational institutions under their care.

Circular to the clerical profession.

Endorsement by the Episcopate.

**Model Ordinance.**

*Nineteenth.* A "Model Ordinance for the Better Preservation of the Public Health in Cities and Boroughs in Pennsylvania." This ordinance had been sent, while in press to each member of the Board for criticism. All suggestions made had been carefully and respectfully considered, and nearly all of them adopted.

Considerable discussion ensued, the objection being made that many of the provisions were too stringent for small towns, and also unnecessary, except in large cities. The secretary called attention to the fact, that the letter to the councils explained that only such portions as were appropriate to local conditions need be adopted. He had also explained this still more fully in a cyclostyle circular which would accompany the ordinance.

On motion of Dr. McClelland, the ordinance was adopted and ordered to be circulated.

The hour for the meeting of the Sanitary Convention having arrived, the Board adjourned to meet at the call of the president.

**FOURTH SESSION.****Third regular.  
Fourth session.**

The Board re-assembled at the call of the president, at 9 A. M., Friday, May 14th, at the same place. Present—Drs. Germer, McClelland, Edwards and Lee. The president in the chair.

**Rules for Boards of  
Health.**

*Twentieth.* The secretary continued his report, and presented a scheme of Rules for Boards of Health of cities and boroughs, designed, like the model ordinance, to be a guide to boards in perfecting their organization and systematizing their work. They were, after discussion, adopted and ordered to be printed and circulated.

**License for slaughter  
houses, etc.**

*Twenty-first.* A form of license for slaughter houses, bone-boiling establishments, etc., was then presented and adopted.

**Regulations for  
slaughter houses.**

*Twenty-second.* A new edition of the Provisional Regulations for Slaughter Houses, in which all attempts to affix definite penalties to offenses was omitted as suggested at the last meeting of the Board, was presented and approved.

**Circulars distribut-  
ed.**

*Twenty-third.* A list of circular letters, which had been copied in cyclostyle and distributed, was then presented, including thirty different subjects and numbering two thousand seven hundred and eighty (2,780) sheets.

**Written communi-  
cations received  
and sent.**

*Twenty-fourth.* The number of written communications received and read by the secretary since October 1, 1886, was four hundred and fifty (450).

The number of similar communications sent out was six hundred and fourteen (614).

**Books and pam-  
phlets.**

*Twenty-fifth.* A catalogue of books and pamphlets to the library of the Board, since its last meeting, comprising one hundred and thirteen titles, of these six volumes had been purchased at an expense of \$14 65.

*Twenty-sixth.* The report of the secretary as treasurer was then read, showing that the expenditures of the Board during the period since the last regular meeting of six months had been \$3,018 68, and leaving a balance in the treasury of \$794 89.

Financial report.

The report was accepted and referred for publication.

The next business in order being the reports of standing committees, Dr. Pemberton Dudley, chairman, presented the report of the Executive Committee, which was on motion accepted and referred for publication.

Standing Committees.

Executive.

Dr. Benjamin Lee, chairman, presented the report of the Committee on Registration and Vital Statistics, showing that until further legislation is obtained it will not be possible to obtain statistics sufficiently general to warrant their publication.

Registration.

The report was accepted and action upon the subject deferred until the next meeting.

Dr. Edwards, chairman of Committee on Preventable Diseases, etc., reported progress.

Preventable Diseases.

Dr. McClelland, chairman of Committee on Public Institutions, etc., reported progress.

Public Institutions.

Unfinished business being next in order, the secretary reported that the case of Dr. Seiler, in reference to which the Board had passed a resolution at the last meeting, sustaining the right of a scientific lecturer to express an opinion before his class as to the character of any nostrum offered for sale, had been decided by the acquittal of that gentleman. The court had therefore given its sanction to the decision of the Board. On motion the Board then adjourned to attend the session of the Sanitary Convention. The Board re-assembled at 1:30 P. M., President Germer in the chair.

Acquittal of Dr. Seiler.

Under the head of new business the secretary presented his vouchers for bills paid by him to date, which were accepted and approved by the Board and ordered to be so endorsed.

Dr. Germer presented a report of the Conference of State Boards of Health, and the American Public Health Association which was accepted and referred for publication.

Report of delegates to National Conference of Boards of Health.

#### FIFTH SESSION.

Board met at 1:15 P. M. All present except Dr. Dudley.

Third regular.  
Fifth session.

The secretary presented a communication from Mr. R. R. Bringhurst, representing the Funeral Directors' Association of Philadelphia, in reference to the "transportation of corpses." In order to bring the subject fully before the Board, the secretary had prepared a "Regulation for the Transportation of Corpses by Railroads and steamboats in the State of Pennsylvania," and had invited Mr. Bringhurst to be present and discuss it. Permission being given, Mr. Bringhurst gave his reasons for opposing the adoption of any especial sack for enclosing bodies during transportation, and ex-

Transportation of corpses.

plained in detail the plan adopted in Philadelphia, and insisted on by the Pennsylvania Railroad Company. He considered that embalming afforded the best safeguard. After general discussion of the subject, the proposed regulation was referred back to the secretary with instructions to request the secretary of the Annual Conference of State Boards of Health to place the subject upon the programme for discussion at the next meeting.

Appointment of delegates to attend Conference of State Boards of Health.

The secretary presented communications from the Secretary of the National Conference of State Boards of Health, and from the Chairman of the Committee of Arrangements of the American Public Health Association, announcing officially that the meetings of those bodies would take place at Toronto, Canada, in October next, and requesting this Board to send delegates. Dr. Edwards considered that it was especially important that this Board should be well represented at the meetings of these important bodies, and moved that the secretary and such other members of the Board as are willing to attend be constituted delegates to these meetings with expenses paid. It was carried.

Appointment of inspectors.

The secretary stated that since the last meeting of the Board, he had appointed the following named gentlemen as District Inspectors of the Board, viz: Dr. G. G. Groff, of Lewisburg, Inspector for the Northumberland District, including Northumberland, Union, Snyder, Montour and Columbia counties.

Dr. L. H. Taylor, of Wilkes-Barre, to be Inspector for the Wyoming District, including the counties of Luzerne, Lackawanna, Pike, Wayne and Susquehanna.

Dr. E. D. Payne, of Towanda, to be Inspector for the Lycoming District, including the counties of Lycoming, Tioga, Potter, Bradford and Sullivan.

Dr. R. L. Sibbet, of Carlisle, to be Inspector for the Susquehanna District, including the counties of Lancaster, York, Dauphin, Cumberland and Adams; and the following named gentlemen local Inspectors:

Mr. G. W. C. James, for the borough of Orbisonia and neighborhood.

Dr. C. B. Dudley, Inspector for the city of Altoona and neighborhood.

Dr. S. W. Latta, Special Medical Inspector for the Pennsylvania Railroad Company.

He requested that these nominations be confirmed. On motion of Dr. McClelland, the nominations, as read, were confirmed.

On motion the Board then adjourned *sine die*.

BENJAMIN LEE, *Secretary*.

#### Minutes of the Fourth Regular Meeting.

Fourth regular meeting.

The fourth regular meeting of the Board was held in the Supreme Court room, State Capitol, Harrisburg, Wednesday, July 14, 1886, at 12:00 M. The members present during the session were Drs. Germer, Lee, Dud-

ley, Engleman and Edwards. President Germer in the chair. The minutes of the third regular meeting, held May 12, 13, and 14, were read and approved. Adjourned to meet at 2:30 P. M.

Minutes read and approved.

## SECOND SESSION.

The Board came to order at 2:30 P. M. The report of the secretary was then presented and its various items considered as follows:

Report of secretary.

*First.* A report of an inspection of the soldiers' orphan school at Mansfield, Tioga county, made in accordance with instructions from his Excellency, Governor Pattison.

Soldiers' orphan school at Mansfield.

The report was received and referred to the executive committee for publication.

*Second.* A report of an inspection of the water supply and drainage of Towanda, Bradford county, made at the request of the borough council of Towanda. The report was received and referred for publication, and the Board, on motion, declared its conviction that the water supply of Towanda was insufficient and liable to dangerous pollution. The secretary was authorized to take such action in premises, whether advisory or executive, as in his judgment the circumstances might demand.

Drainage and water supply of Towanda.

*Third.* A report of a slight outbreak of small-pox at Emporium from the clerk of the borough council, with the action of the secretary thereon.

Small-pox at Emporium.

The report was accepted and the secretary was instructed to return the thanks of the Board to the said officer for his prompt notification of the secretary.

*Fourth.* A complaint of defective sewerage at Centralia, Columbia county, with reply from the borough council and action of secretary.

Drainage of Centralia.

The report was accepted and referred for publication.

*Fifth.* A complaint of a slaughter-house near Taylorville, Lackawanna county, with report of Medical Inspector Taylor upon the same, and order of the secretary for the abatement of the nuisance.

Slaughter-house at Taylorville.

Report received and referred for publication, and action of secretary endorsed.

*Sixth.* A complaint of a nuisance at Newtown, Bucks county, of an offensive stable-yard, cess-pool and pig-pen, with report of Medical Inspector Atkinson thereon, ignoring the complaint.

Nuisance at Newtown.

Report accepted and referred for publication.

*Seventh.* A complaint of a nuisance maintained by the school board of Jenkintown, Montgomery county, in the shape of a well polluted by a cess-pool on the school grounds, in defiance of an order from the State Board of Health for its abatement. Complaint made by the board of health of Jenkintown.

School board of Jenkintown.

The report was ordered to be filed for publication and the secretary was instructed to proceed to take such

measures as in his judgment are necessary to enforce the rules and regulations of the Board.

Drainage of  
Altoona.

*Eighth.* A complaint from the board of health of Altoona of the insanitary condition of the streets and deficiency of drainage of that city. This complaint involved the question of the powers of a local board of health as regards city councils, and had been referred by the secretary to the Attorney General of the Commonwealth for decision.

The reply of that official had not yet been received.

Nuisance at Fern-  
wood.

*Ninth.* A complaint of a household nuisance at Fernwood, Delaware county. A complaint of a nuisance, from an individual in Burnside, Clearfield county. The secretary stated that his object in bringing these cases to the attention of the Board, was to obtain an expression of opinion from the members as to how far the Board or its executive officer was called upon to take notice of individual complaints. His own feeling was, that in order to entitle a complaint to attention, it should emanate from a borough or city council or board of health or a combination of at least a required number of citizens.

The opinion of the Board was, that individuals suffering from individual nuisances should find their remedy in common law or local authorities, as the Board was not created for the purpose of meeting such cases.

Bone boiling nu-  
isance of Braddock.

*Tenth.* A complaint from the clerk of the borough council of Braddock, Allegheny county, of a nuisance in the shape tallow rendering establishment within the limits of the borough. The secretary had sent the inspector of the district to examine into the case and had not yet received his report.

The report of the secretary was accepted and the further management of the case left to his discretion.

Appointment of in-  
spector H. Penna.  
K. K. Co.

*Eleventh.* The secretary announced the appointment of Dr. William R. Hoch as especial Medical Inspector to the Board for the Pennsylvania Railroad Company, and asked for the confirmation of the appointment, which was accordingly ordered. The secretary stated that since his appointment Dr. Hoch had reported the destruction of sixty-four bundles of foul clothing left in the Philadelphia station of the company.

Destruction of foul  
clothing.

Financial report.

*Twelfth.* The report of the secretary as treasurer showed a balance to date of \$556 97, and a balance at the end of the fiscal year, June 1st, of a little more than a hundred dollars. As the Board had undertaken absolutely no work in the way of scientific investigation or analysis, and as its funds had been used with strict regard to economy, nothing further was needed to show the necessity for an increased appropriation.

The report of the secretary was then accepted as a whole.

Report of executive  
committee, "Annals  
of Hygiene."

The report of the executive committee was then presented by Dr. Pemberton Dudley, chairman, and was confined to the subject of the adoption of the "Annals of Hygiene," as the official organ of the Board, which

was earnestly recommended as an efficient means of disseminating knowledge on hygienic matters among the people.

The report was accepted and referred for publication.

The report of the Committee on registration and Vital Statistics, Dr. Benjamin Lee, chairman, stated, that in the present unsatisfactory condition of the registration laws, it was quite impossible for the Board to fulfil its duties in this regard. The following resolution was thereupon offered by the committee:

Report of Committee on Registration.

*Resolved*, That the Committee on Medical Legislation be and is hereby instructed to prepare a supplement to the act establishing a "State Board of Health and Vital Statistics," which shall give operative force to the clause which declares it to be the duty of the Board "to insure the faithful registration of births, marriages and deaths, of prevalent diseases and of practitioners of medicine and surgery in this Commonwealth, in the several counties and in the Central Bureau of Vital Statistics," and to report the same to the Board at its next meeting in November, in order that the bill may be introduced before the next Legislature.

The report was accepted and referred for publication and the resolution adopted.

The other standing committees reported progress. Dr. Edwards, chairman of the Committee of Arrangements for the State Sanitary Convention, then presented his report, which was accepted, and the thanks of the Board tendered to the chairman for his indefatigable and successful labors.

Committee of Arrangements for State Sanitary Convention.

On motion of Dr. Engelman, the *Annals of Hygiene*, edited by Dr. Joseph F. Edwards, was adopted as the official organ of the Board, in accordance with the arrangement proposed by the Executive Committee.

Adoption of *Annals of Hygiene*.

The election of a president being next in order, Dr. Edward Germer, of Erie, was nominated and unanimously re-elected to fill the position.

Re-election of Dr. Germer as president.

Under the head of new business, the secretary begged leave to introduce the subject of a uniform regulation for the transportation of corpses throughout the United States. He had, as instructed at that last meeting, notified the secretary of the national conference of State boards of health, that this Board desired to have that subject placed upon the programme for discussion at the next meeting at Toronto.

Transportation of corpses.

That gentleman had replied, suggesting the expediency of obtaining information in advance as to existing regulations in the different States. The secretary thereupon suggested the following resolutions, which was carried: *Resolved*, That the "Committee on Preventable Diseases and the Supervision of Travel and Traffic" be, and is hereby, instructed to address a circular to the secretaries of all State Boards of Health, inquiring what regulations, if any, exists in their several States, with regard to the transportation of corpses, and to



formulate suggestions thereupon, to be laid before the convention at Toronto, in October, 1886.

Provision for military camps.

The secretary then stated that owing to the large number of military encampments throughout the State; it was impossible to inspect them as had been done last year. As a substitute for such inspection he desired to offer the following resolutions, viz:

*Resolved*, That the Committee on Preventable Diseases, etc., be, and is hereby, instructed to address a circular to the surgeon-in-charge of each military camp, now formed or to be formed during the present summer in this State, requesting a report of the diseases occurring during the encampment and the probable cause; the location, drainage and sanitary police of the camp; the precautions adopted for ensuring the purity of water and food-supply; the character of clothing and camp-equipage, and other points affecting the health of their respective commands that may suggest themselves.

*Resolved*, That the said committee be instructed to prepare a brief set of regulations for the choice of camping grounds, and the sanitary police of encampments, for the use of the National Guard and of other bodies desiring to form encampments within the boundaries of the State.

It was adopted.

Asiatic cholera.  
Precautionary resolutions.

Dr. Dudley then offered the following preamble and resolution:

WHEREAS, Asiatic cholera has prevailed in Southern Europe, and threatened this country for several successive years: *And whereqs*, This disease has recently broke out again in Italy and other places on the Mediterranean; therefore,

*Resolved*, That this Board deems it wise to caution our sanitary authorities and people against that false sense of security, which familiarity with epidemic disease begets, and to urge a renewal of those measures, which have kept our State free from its ravages in past years, and have also resulted in the prevention of general sickness in all communities in which such energetic measures have been adopted.

Adjournment.

The resolution was adopted and the Board then adjourned *sine die*.

#### Minutes of the Fifth Regular Meeting.

Fifth regular.  
First session.

The fifth regular meeting of the Board was held at Harrisburg, Wednesday, November 10, 1886, in the Supreme Court room, Capitol building. The meeting was called to order by the president, Dr. Edward William Germer, at 12:00 M. The members present during the session were Drs. Germer, Dudley, Engelman, McClelland and Lee and Mr. Hering. The minutes of the last meeting, held July 14, were read and approved and ordered to be incorporated in the annual report.

The secretary then presented a preliminary report in

which he gave a resumé of the work thus far accomplished by the Board.

The various items of the secretary's report were then separately considered as follows: Secretary's report.

*First.* A history of three simultaneous epidemics of typhoid fever occurring in different parts of the State, one at West Elizabeth, one at South Pittsburgh, and one at Glasgow, including detailed histories of cases treated by Dr. McGren, of West Elizabeth, and a history of the Glasgow outbreak, by Dr. Thomas J. B. Rhoads, of Pottstown. Typhoid at West Elizabeth, Glasgow and South Pittsburgh.

The several papers were, on motion, accepted and referred for publication in the annual report.

*Second.* The correspondence between the Secretary of the State Board of Health and the Board of Health of Philadelphia on quarantine against small pox. Quarantine against small-pox.

Referred for publication.

The Board then took a recess until 2:00 P. M.

## SECOND SESSION.

The Board re-assembled at 2:00 P. M., Dr. Germer presiding. The reading of the secretary's report was continued as follows: Fifth regular.  
Second session.

*Third.* Report of an inspection of the Bedford county almshouse, by Dr. R. Lowry Sibbet, medical inspector of the Board, accompanied by correspondence with the Board of State Charities. This report showed the existence of a most dangerous and disgraceful condition of things in that institution. Bedford county almshouse.

On motion the report was referred to the executive committee for publication, and on motion of Dr. McClelland the following resolution was adopted:

WHEREAS, The inspecting officer of this Board reports an unsanitary and disgraceful condition of affairs existing in the Bedford county almshouse; therefore,

*Resolved,* That the Executive Officer of this Board be directed to institute proceedings, either directly in the name of the Board or through some other appropriate official channel, looking to the abatement of the same.

*Fourth.* A complaint of an offensive slaughter-house at Mt. Oliver, Allegheny county. A notice to abate had been served on the proprietor, and the Inspector of the district, Mr. L. H. Hunter, had verbally reported to the secretary that the order had been complied with. Nuisances at Mt. Oliver.

Referred for publication.

*Fifth.* A complaint of a slaughter-house at West Newton, Westmoreland county. West Newton.

*Sixth.* Report of Medical Inspector William B. Atkinson of an inspection at Rosemont, Montgomery county, the village which witnessed summary measures on the part of the Board last year in order to abate a nuisance which was the cause of typho-malarial fever. The report showed a greatly improved condition of things and little or no annoyance or ill health at present. Rosemont.

Referred for publication.

Limerick.

*Seventh.* Report of William B. Atkinson, M. D., Medical Inspector, on a bone-boiling establishment at Limerick, Montgomery county, ignoring the complaint as a cause of sickness.

Braddock.

*Eighth.* Complaint of nuisances in the shape of slaughter-houses and a fat-rendering establishment at Braddock, Allegheny county, with report of Inspector L. H. Hunter and order for abatement. The secretary stated that he had visited the town personally and found a condition of affairs which seriously jeopardized the health not only of the residents of Braddock, but of all towns lower down the river (the Monongahela) and of Pittsburgh. The nuisance consisted of six or seven slaughter-houses and a bone-boiling establishment directly on the bank of the river, having shutes for their offal, which deposited it during high water in the stream, but during low water on the bank, where it was left to decay. The river at this point, owing to the navigation dams, is almost entirely without current, so that a strong wind up the stream could easily create a current in that direction and pollute the water at the intake of the borough water-works a few yards above. The bank of the river, a low beach, bounded by a high, steep embankment, was literally paved with entrails, offal and carcasses in every stage of decay and putrefaction for a distance of a third of a mile, and the effect upon the purity of the stagnant water can readily be imagined. The secretary had left the matter in the hands of the solicitor to the borough council, who was to keep him informed as to the result.

The report and remarks of the secretary were referred for publication.

Blairsville.

*Ninth.* A complaint of defective drainage at Blairsville, Indiana county, with report of inspection by Dr. S. R. Rutledge, showing that the nuisance had been to a great extent abated by the action of the borough authorities, in opening drains, but suggesting the importance of an under-drain.

Referred for publication.

Monroeton, Bradford county.

*Tenth.* Complaint of pollution of Towanda creek, by the tannery of Procter & Hill, with report of inspection by Medical Inspector E. D. Payne.

Referred to the Committee on Water Supply, Drainage, etc., for opinion and advice.

Emporium small-pox.

*Eleventh.* Report of an epidemic of small-pox at Emporium, by Dr. R. P. Heilman, attending physician.

Referred for publication.

Allentown typhoid.

*Twelfth.* Report of an inspection of the water supply of Allentown, made in consequence of an epidemic of typhoid fever at that place, by Medical Inspector Wm. B. Atkinson, M. D., showing danger of contamination to the water.

Referred for publication.

Centralia.

*Thirteenth.* A communication from the borough council of Centralia.

Referred.

*Fourteenth.* Report of an inspection of the water-supply of Bethlehem, made in consequence of cases of typhoid fever having been prevalent in that borough, and showing that all needed precautions are taken to protect its purity. Inspection made by Medical Inspector Wm. B. Atkinson, M. D. Bethlehem.

Referred for publication.

*Fifteenth.* Admonitory communication addressed by the secretary to the borough council of New Castle, Lawrence county, in reference to the importance of constructing a sewer to correct the defective drainage of that place. The Secretary was glad to be able to state that the advice had been acted upon, and the sewer was now nearly completed. New Castle.

Referred for publication.

*Sixteenth.* Report of the inspection of the Lakeside Hotel at Eaglesmere, Sullivan county, made by Medical Inspector E. D. Payne, M. D., in consequence of the reported occurrence of typhoid fever in the house. Eaglesmere.

Referred for publication.

*Seventeenth.* Report of an inspection of drowned lands in Exeter and Wyoming boroughs, Luzerne county, caused by the drainage of the Schooley shaft, made by David Engelman, M. D., a member of the Board, with recommendations for the abatement of the nuisance. Exeter and Wyoming drowned lands.

The report was accepted and referred for publication, the recommendations adopted, and the Secretary instructed to carry them out.

*Eighteenth.* Report of the delegates to the American Public Health Association. The secretary reported that the Board had been represented at this very important meeting at Toronto, October 4th to 8th, by three of its members, the President, Dr. Engelman and himself. The sessions were of great interest. Private citizens vied with the committee of arrangements and the civic authorities in contributing to the pleasure and comfort of the members. The question of the expediency of the construction of an intercepting sewer for the city of Toronto, being before the people for decision, and the opinion of the association having been sought by his honor the Mayor, the Secretary of this Board had offered the following resolution:

*"Resolved,* That in the opinion of this association, the construction of an intercepting or trunk sewer is a sanitary necessity to the city of Toronto," which, after slight modification by the advisory committee, was unanimously adopted. Intercepting sewer at Toronto.

The most important action of the association was the adoption of a series of rules in reference to inter-State notification of the existence of infectious and contagious diseases. These rules were first adopted by the National Conference of State Boards of Health, afterwards modified by the advisory council and then adopted by the association.

Inter-State notification of contagious diseases.

On motion, the report of the delegation was received and referred for publication.

The rules, as read by the secretary, were then formally adopted as a regulation of the Board, and ordered to be spread upon the minutes. They are as follows:

WHEREAS, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever and small pox; be it *Resolved*:—

1. That it is the sense of the National Conference of State Boards of Health, that it is the duty of each State and Provincial Board of Health within whose jurisdiction any of said diseases may occur, to furnish immediate information of the existence of such disease to boards of health of neighboring States and Provinces, and to local boards in such States as have no central board, in which the duty of notification shall lie upon the local boards.

2. That upon the prevalence of rumor of the existence of pestilential disease in any State or Province, if positive definite information thereon be not obtainable from the proper health authorities, this conference holds that the health officials of another State are justified in entering the before-mentioned State or Province for the purpose of investigating and establishing the truth or falsity of such reports.

3. That whenever practicable, the investigations undertaken under the preceding section shall be made with the coöperation of the State or local health authorities.

4. That any case which presents symptoms leading to serious suspicion of the existence of one of the aforementioned diseases, shall be treated as suspicious, and reported as provided for in cases in which the diagnosis is certain.

5. That any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

6. That any suspected case respecting which efforts are made to conceal its existence, full history and true nature, shall be deemed suspicious and so reported.

7. That in accordance with the provisions of the foregoing resolutions, the Boards of Health of the United States and Canada represented at this conference, do pledge themselves to an interchange of information as herein provided.

*Nineteenth.* On behalf of the same delegation in attendance upon the National Conference of State Boards of Health, the secretary reported: That, in obedience to the resolution of the Board at the last meeting, he had requested Dr. Granville P. Conn, the secretary of the conference, to have the subject of "Uniform Regulations for the Transportation of Corpses" placed upon the programme for discussion. That gentleman had, under a misapprehension, announced him as

Conference of State boards of health.

Transportation of corpses.

to read a paper on the subject. The subject had been referred to Dr. Edwards, chairman of the Committee of Travel and Traffic at the last meeting, with instructions to address a letter of inquiry to the various boards of health of the United States and Canada, asking what regulations, if any, had been adopted in their respective states. Replies had been received from twenty states, and in seven of these rigid regulations had been adopted. These replies were forwarded to the secretary at Toronto, by Dr. Edwards, but failed to reach him in time to enable him to present a paper. He, however, introduced the subject in a few remarks, and moved the adoption of the rules suggested by the representative from Michigan, and spread upon the programme. These were referred to a committee, of which your secretary was chairman.

This committee reported the rules with certain modifications, but after considerable discussion the subject was laid upon the table. There are therefore now no uniform regulations on this subject in the United States. As it was in his opinion, a subject of great practical moment, the secretary suggested that the Board proceed to the discussion of the question. On motion the subject was postponed, to be taken up in the place assigned to it in the order of business under the head of unfinished business.

*Twentieth.* The secretary desired to call attention to a very important charge of Judge Ewing, of Pittsburgh, in a case involving the right of the Board of Health of that city to remove a child ill with small-pox, from the house of its father. Suit had been brought against the Board, but the charge was clearly in favor of the defendants, and the jury rendered a similar verdict from which no appeal was taken.

Charge of Judge  
Ewing.

*Twenty-first.* The Secretary also presented an opinion of Thomas McFarland, Esq., attorney to the Pittsburgh Board of Health, on the powers of local boards of health, and of the State Board of Health, in certain relations to municipal authorities.

Opinion of Thomas  
McFarland.

It was ordered that both these opinions should be embraced in the annual report to the Governor.

*Twenty-second.* The secretary then read a report of a Sanitary Conference held in Pittsburgh, October 11th, between himself and members of the boards of health, of Pittsburgh, Allegheny and neighboring towns, and other gentlemen interested in sanitary reform in consequence of their official position. The conference had been of much interest, and had promoted a mutual sense of reliance and good will among the participants.

Sanitary conference  
in Pittsburgh.

The report was accepted and referred for publication.

*Twenty-third.* Report of an inspection made at the State Reformatory at Morganza, by the Secretary, assisted by Dr. R. Lowry Sibbett, Medical Inspector, with a view of determining the cause of an epidemic of con-

Morganza epi-  
demic.

tinued fever in one of the buildings of that excellent institution.

Referred for publication.

**Bristol.**

*Twenty-fourth.* Report on defective drainage of Bristol. Similarly referred.

The Board then on motion adjourned to meet at 7.30 P. M.

### THIRD SESSION.

The Board re-assembled at 7.30 P. M., President Germer in the chair.

**Report of executive committee.**

The first business in order was the report of the Executive Committee, Dr. Pemberton Dudley, chairman, which showed that the committee had audited bills to the amount of \$1,831 10, comprising vouchers Nos. 85 to 116, inclusive.

The report was accepted and approved.

**Spring meeting to be held at Harrisburg; time to be fixed by the executive committee.**

On motion, the by-law fixing the time for the spring meeting was suspended, and it was ordered that the meeting be held at Harrisburg at such time as the Executive Committee may designate.

**Committee on Registration.**

The Committee on Registration and Vital Statistics, Dr. Benjamin Lee, chairman, reported that as it was a matter of some doubt which law ought to be amended in order to provide remuneration for the registering officers, he had thought it wiser not to carry out the instructions of the Board in reference to amending the law creating it. He reported progress.

**Committee on Preventable Diseases.**

The chairman of the Committee on Preventable Diseases being unavoidably absent, there was no report from that committee.

**Committee on Water Supply.**

The chairman of the Committee on Water Supply, Drainage, Topography and Mines, Mr. Rudolph Hering, presented portions of two reports, on a source of water supply for Philadelphia, and on the sanitary survey of the Delaware and Lehigh valleys, which had been prepared for the Philadelphia water department, but were of such general interest to the State as to make them appropriate for the consideration of this Board.

On motion they were ordered to be published in the annual report.

**Sewerage of East End of Pittsburgh.**

Dr. McClelland, a member of the same committee, reported that a commission has been appointed to consider the adoption of a comprehensive sewer system for the large territory known as the East End of Pittsburgh, now almost wholly destitute of such facilities, and suffering seriously in the health of its residents in consequence, and to report a plan for the same to the city councils. At the present time the opinion of the commission appeared to be that no one particular system or scheme would meet the requirements of so large an area with so diversified a surface, but that the system to be adopted would need to comprise the best features of several systems.

On motion it was

*Resolved*, That the State Board of Health learns with pleasure of the appointment of a commission to recommend a system of sewerage for the large and populous district known as the East End of Pittsburgh, regarding its early and proper sewerage as of vital importance to the health of a large body of the residents of that city.

Dr. McClelland, as chairman of the Committee on Public Institutions and School Hygiene, reported that decided improvements were visible in recent school architecture from a sanitary point of view.

Committee on Public Institutions.

The reports were accepted.

The Committee on Adulterations, Poisons, Explosives and other sources of danger to life and limb, reported through its chairman, Dr. Pemberton Dudley, that no work was possible in that department without the expenditure of money, and the appropriation allotted the Board was too meagre to allow of such expenditure.

Committee on Adulterations.

The report was accepted.

Dr. David Engelman, chairman of the Committee on Sanitary Legislation Rules and Regulations, presented a copious report, consisting of a digest of the laws of the Commonwealth on all subjects relating to the protection of life and health apart from those relating to criminal assaults.

Committee on Sanitary Legislation.

Digest of sanitary laws.

The report was on motion referred back to the committee for completion, and the thanks of the Board presented to Dr. Engelman for its preparation.

The report of the Secretary as Treasurer was then read, showing a balance in the treasury, October 1, of \$330 18. Vouchers 85 to 116, which had already been audited by the Executive Committee were appended to the report.

Financial report.

The report was accepted and the vouchers allowed.

The Secretary reported the number of written communications received by him during the year to have been nine hundred and fifteen (915); the number of similar communications sent by him to have been one thousand and sixty-three (1,063).

Number of letters.

The number of volumes purchased for the library of the Board has been eighteen (18).

Volumes purchased.

The number of volumes presented to the Board during the year has been two hundred and three (203); and the number of pamphlets presented has been fifty-three (53). A catalogue of books and pamphlets added during the year was appended to the report; also a list of stationery received upon requisition, and of printed matter received from the Superintendent of State Printing.

Volumes presented.

Stationery, etc.  
Printed matter.

Unfinished business being in order, the subject of the transportation of corpses was taken up, and a series of regulations governing the transportation of dead bodies, and especially of such as have died of contagious or infectious diseases, was considered and adopted as a regulation of the Board.

Transportation of corpses.

Regulations adopted.



Plans for a county  
almshouse.

New business being in order, the Secretary presented a series of plans and suggestions for the construction of a county almshouse on sanitary principles, prepared at his request, by Dr. R. Lowry Tibbet, medical inspector for the Cumberland district. On motion the paper was accepted, and referred for criticism and suggestion to the Committee on Public Institutions.

On motion the Board then adjourned *sine die*.

ATTEST:

BENJ. LEE,  
Secretary.

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## PART II. – APPENDICES.

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## APPENDIX A.

### REPORTS OF STANDING COMMITTEES.

1. Report of Executive Committee—Pemberton Dudley, M. D., Chairman.
2. Report of Committee on Registration and Vital Statistics—Benjamin Lee, M. D., Chairman.
3. Report of Committee on Preventable Diseases, and the Supervision of Travel and Traffic—J. F. Edwards, M. D., Chairman.
4. Report of Committee on Water Supply, Drainage, Sewerage, Topography and Mines—Rudolph Hering, C. E., Chairman.
5. Report of Committee on Public Institutions and School Hygiene—J. H. McClelland, M. D., Chairman.
6. Report of Committee on Adulterations, Poisons, Explosives, and other Sources of Danger to Life and Limb—Pemberton Dudley, M. D., Chairman.
7. Report of Committee on Sanitary Legislation, Rules and Regulations—David Engelman, M. D., Chairman.

#### I. REPORTS OF EXECUTIVE COMMITTEE.

##### *To the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania :*

Your executive committee respectfully report that since the last stated meeting of your Board in November, this committee has held two regular and two special meetings.

At a special meeting held November 30, 1885, it was ordered that the president and secretary of the Board be its accredited representatives at the meeting of the American Public Health Association, and at the conference of State Boards of Health, to be held in Washington, D. C., in December, 1885, and that the necessary expenses of said representatives be paid by the Board.

At a regular meeting held January 20, 1886, the secretary presented letters from the clerks of orphans' courts of Lancaster and Greensburg declining to furnish returns of marriages to the Board without compensation. The secretary had written to the Secretary of the Interior in reference to the matter, and had received a reply to the effect that there is no law to compel the performance of the service without compensation. As one of the letters received contained a bill for services of the kind already rendered, the secretary asked instructions as to what reply should be made. It was therefore, on motion,

*Ordered,* That it is the sense of the executive committee, that the

appropriation for the expenses of the Board was not designed to be applied to the expenses of registration.

The secretary was directed to notify the clerks of orphans' courts of this decision, and also to inform them that the Board fully recognized the justice of their claims, and would suggest to the Legislature at its next session such enactments as would compensate them for all services they might render.

At a special meeting held February 26, 1886, the executive committee, under authority conferred at the last regular meeting of the Board, decided that the next regular meeting of the Board be held in Philadelphia, instead of at Harrisburg, as provided in the by-laws.

It was also decided, under authority given by your Board, that in connection with the May meeting, a sanitary convention should be held in conformity with the spirit of the act under which the State Board was organized, and which makes it one of the duties of this Board to disseminate information respecting sanitary matters. A special committee, consisting of Drs. J. F. Edwards, Pemberton Dudley and the secretary, was appointed to make suitable arrangements for the said sanitary convention, with authority to solicit subscriptions, issue invitations, secure a place of meeting, prepare a programme, etc., and to draw upon the secretary for such petty cash as might be needed in making the preliminary arrangements.

At the regular meeting of the committee held April 21, 1886, Dr. J. F. Edwards, chairman of the committee of arrangements for the sanitary convention, reported that McCaull's Opera House, on Broad street, below Locust street, had been secured as a place of meeting, that Professor William Pepper, M. D., Provost of the University of Pennsylvania, had been chosen to preside, that a considerable number of eminent citizens had consented to act as vice presidents, that over thirty papers on important sanitary topics had been promised, and that many distinguished sanitarians had signified their willingness and intention to be present and participate in the proceedings of the convention.

Your committee received a communication inviting them to inspect the system of sanitary plumbing, recently introduced into the residence of Dr. John E. James, No. 1521 Arch street, Philadelphia, by Mr. Thomas F. Brock. The invitation was accepted, and on Wednesday, April 28, Doctors Lee, Engelman and Dudley, with Chief Engineer and Surveyor Smedley, Mr. Lawrence, president, and several members of common council, and others interested, carefully examined the construction and tested the working of the system of drainage employed in said premises.

The distinctive peculiarities of the system employed consist of—*First.* A main drain extending from the street sewer to a point several feet above the highest point of the surrounding buildings, where

it has a free outlet, and with no trap in any part of its course. *Secondly.* The use of as few traps as practicable and the concentration of as many waste pipes of fixtures as possible upon a single trap. *Thirdly.* Placing the traps as near the main drain as possible and making the pipe join the main drain at right angles and in a horizontal direction, to prevent siphoning. *Fourthly.* Ventilating pipes leading from all the waste pipes on the house side of the traps, which ventilating pipes open into a single shaft terminating several feet above the highest point of the building. *Fifthly.* Reinforcing the up-current in the ventilating shaft by the heat from a contiguous flue or by a gas jet in its course upwards through a closet or bath-room.

The tests applied in the presence of your committee showed every part of the system in perfect working order, a current of air being drawn down into each fixture, as shown by the wind gauge and by the inverted flame. Plans were also exhibited showing that the system is radically, if not antagonistically, different from that required by the newly adopted rules and regulations of the Philadelphia Board of Health.

Since your last regular meeting in November, 1885, your executive committee has examined and approved bills of the secretary as against the Board amounting to the sum of ———.

Respectfully submitted, on behalf of the Committee,

PEMBERTON DUDLEY, *Chairman.*

*May 12, 1886.*

The executive committee begs leave, respectfully, to report that it has held one regular meeting, at the executive office, 1582 Pine street, on the 29th day of October, and one special meeting at the Supreme Court room, Harrisburg, on the 10th day of November. At the regular meeting, bills were audited and approved to the amount of \$1,668.54, comprising vouchers Nos. 85 to 113 inclusive. The question of the expediency of holding another sanitary convention next spring was discussed. At the special meeting at Harrisburg, bills were audited and approved to the amount of \$152 56, comprising vouchers Nos. 114 to 116 inclusive.

Respectfully submitted,

PEMBERTON DUDLEY,

*November 10, 1886.*

*Chairman Executive Committee.*

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## II. REPORT OF THE COMMITTEE ON REGISTRATION AND VITAL STATISTICS.

The Committee on Registration and Vital Statistics begs leave respectfully to report that in the absence of legislation making reports of vital statistics compulsory, its work so far has been simply preparatory. It has drawn up forms for the registration of marriages

and of medical practitioners, these being the only subjects with regard to which registration laws, uniform throughout the State, exist. These it has distributed to clerks of orphans' courts, who are the legal registrars of marriages, and to prothonotaries, who are the legal registrars of medical practitioners; but as no provision has yet been made for meeting the expense of reporting to the State Board of Health, the majority of those officers have either neglected or refused to make returns. Copies of these forms will be found in their appropriate place in the appendix. It is earnestly to be desired that the Legislature, at its next session, should supply the missing link, which is necessary to enable the board to carry out this most important function.

As it is a matter of doubt which law ought to be amended in order to provide compensation for such labor, the committee has thought it wiser to defer carrying out the instruction of the Board in reference to framing an amendment to the law creating the Board.

Respectfully submitted on behalf of the Committee,

BENJAMIN LEE,  
*Chairman.*

*November 1, 1887.*

### III. REPORT OF COMMITTEE ON PREVENTABLE DISEASES AND THE SUPERVISION OF TRAVEL AND TRAFFIC.

The Committee on Preventable Diseases and the Supervision of Travel and Traffic begs leave respectfully to report that, in obedience to the instructions of the Board at its May meeting, the chairman addressed letters to the secretaries of all the State Boards of Health, inquiring whether legal restrictions existed in their several States in regard to the transportation of dead bodies, and, if so, requesting copies of the laws or regulations on the subject. Replies have been received from twenty States and in seven of these stringent regulations have been adopted. The matter was brought to the attention of the conference of State Boards of Health at Toronto by the secretary of this Board, but that body declines to take any action upon it. The correspondence is herewith submitted. The committee feel the subject to be one of no little importance and recommend to the Board the early adoption of regulations controlling such transportation, which shall be binding throughout the State.

Respectfully submitted,

JOSEPH F. EDWARDS, *Chairman.*

### IV. REPORT OF THE COMMITTEE ON WATER SUPPLY, DRAINAGE, ETC.

*To the President and Members of the State Board of Health :*

The committee begs leave to report as follows :

The question of water supply in the State has, during the past year, received a contribution in the final report made to the Philadelphia

water department by the engineer in charge on an investigation for a new water supply for that city. The general conclusions contained therein are as follows :

#### GENERAL CONCLUSIONS.

It remains now briefly to recapitulate the final conclusions that have been arrived at from the examinations described above. In making these investigations, it has been taken for granted from the outset that the water from any point in the Schuylkill river, and from any point in the Delaware river below Trenton, will not be of a sufficiently good quality to furnish a future supply for the city, although the fact has been admitted that at present the Delaware water at Lardner's Point, within the city limits, is not only fairly good, but is likely to remain so for some time.

In looking about for an improved supply every practicable scheme was considered. No success could be expected from a supply by artesian or driven wells in this locality, nor would filtering or purifying the water of the Schuylkill or Lower Delaware give permanent satisfaction. The only schemes worth investigating were those which bring to the city the water of running streams in the Schuylkill, Delaware or Lehigh watersheds.

It required but little thought to see that the water from the streams north of the Blue mountains would be the best available in quality, not only now, but for an indefinite future, and that this region would therefore have to be the ultimate source of water supply for Philadelphia, and probably also for other cities lying between the mountains and the seaboard.

To obtain an intelligent opinion on the cost of such a supply, surveys and examinations were made which showed that inasmuch as water of good quality can be secured at a less expense from nearer localities, it is not advisable at once to go to the Blue mountains.

In adopting a scheme for an earlier future, this ultimate source, however, should be considered, so that the aqueducts now constructed could be available for the final source of supply. The quantity of water which it was thought best to calculate for at present was at least 200,000,000 gallons per day, or more than double the present consumption. The elevation at which the water should be delivered was fixed at about one hundred and seventy feet above datum (the height of the present basin at Wentz's farm and the proposed basin at Cambria), because it gives the most favorable distribution for the city.

The streams offering a good water supply nearer than the Blue mountains are the Perkiomen creek, a tributary of the Schuylkill river, the Tohickon and Neshaminy creeks, tributaries of the Delaware river, and the Delaware river itself, above Trenton. In point of quality, the water of the latter has been found to be the best; that of



the Upper Perkiomen and Tohickon creeks comes next in quality, and that of the Neshaminy and Lower Perkiomen creeks is least good.

An estimate of the cost of obtaining Delaware water alone (table 34) indicates that above Ladner's Point the most economical scheme is to bring it from Point Pleasant, as stated in the last report, because the river has quite a descent near this place, which materially reduces the height of pumping as compared with points lower down the river, such as Lumberville, New Hope and Yardleyville. Another advantage gained by this sudden descent is the water power, which can be developed to furnish a daily supply of 120,000,000 gallons during the dry season.

The cost of the aqueduct, pumping plant, and capitalized cost of pumping amount to \$19,622,543, if 210,000,000 gallons of water daily are pumped by steam, and to \$15,475,262, if only 120,000,000 gallons are pumped by water and the remainder by steam.

Purely gravity supplies without pumping (table 35) can be obtained from either the Perkiomen creek or from the Tohickon and Neshaminy creeks combined. The latter project cannot be made to furnish a daily supply of over 156,000,000 gallons in years of minimum rainfall. While the water furnished by the Tohickon and Upper Perkiomen creeks is good, that which is taken from the Neshaminy and Lower Perkiomen, as already stated, will be of much inferior quality. Neither of these purely gravity schemes would therefore be quite satisfactory.

The cost of procuring a supply from the Perkiomen creek is \$13,674,493, and from the Tohickon and Neshaminy creeks together, \$13,846,662.

Finally, a combined gravity and pumping scheme (table 36) is possible by procuring water from the Tohickon creek and from the Delaware river at Point Pleasant. The former can furnish on the average between 90,000,000 and 100,000,000 gallons per day by gravity; in minimum years, only 80,000,000 gallons can be depended upon. The Delaware river, as we have seen, can furnish 120,000,000 gallons by water power. Both the Tohickon and Delaware waters have been found not only to be of good quality, but much better than the waters of the Neshaminy, and particularly of the Lower Perkiomen creeks.

The cost of this scheme is \$12,695,941, if the water power is utilized, and \$17,717,025, if steam power is used.

It is, therefore, clear that the best and most economical project to supply the city of Philadelphia with water is to bring to it the Tohickon water by gravity, and to pump from the Delaware river, at Point Pleasant, by water power.

In order to perceive the relative values of the different schemes with still more distinctness, I have made three estimates, one for completely filling the aqueduct, one for furnishing 150,000,000 gallons, and one for only 90,000,000 gallons per day.—(See table 37.)

To supply the latter quantity of water from the Perkiomen creek requires an expenditure of \$10,495,000. In bringing 90,000,000 gallons daily from the Delaware watershed, it is found that the Neshaminy creek alone could furnish the amount, except during years of minimum rainfall, at a total expense of \$7,875,000. The Tockicon creek also could furnish a quantity up to 90,000,000 gallons, except during very dry years, at a cost of \$10,008,000. If the Delaware water at Point Pleasant is used, the cost for 90,000,000 gallons is \$12,775,000, if pumped by steam, and \$9,873,000, if pumped by water power. At Lardner's Point, the cost would be \$7,064,000.

TABLE 37.—*Cost for delivering 90, 150, 210 million gallons daily.*

A, 90,000,000 gallons daily.

Delaware river, at Lardner's Point, pumping by steam, .....	\$7,064,000 00
Neshaminy creek, by gravity, .....	7,875,000 00
Delaware river, at Point Pleasant, pumping by water power, .....	9,873,000 00
Tockicon creek, by gravity, .....	10,008,000 00
Perkiomen creek, above Green Lane, by gravity, .....	10,495,000 00
Perkiomen creek, above Schwenksville, by gravity, .....	11,167,000 00
Delaware river, at Point Pleasant, pumping by steam, .....	12,775,000 00

B, 150,000,000 gallons daily.

Delaware river, at Lardner's Point, pumping by steam, .....	10,415,000 00
Tockicon creek, by gravity, and Delaware river, at Point Pleasant, pumping by water power, .....	11,215,000 00
Perkiomen creek, above Schwenksville, by gravity, .....	12,139,000 00
Tockicon and Neshaminy creeks, by gravity, .....	13,597,000 00
Tockicon creek, by gravity, and Delaware river, at Point Pleasant, pumping by steam, .....	14,275,000 00
Delaware river, at Point Pleasant, pumping by steam, .....	16,355,000 00
Perkiomen creek, above Green Lane, and Lehigh affluents, by gravity, .....	17,635,000 00

C, 210,000,000 gallons daily.

Tockicon creek, by gravity, and Delaware river, at Point Pleasant, pumping by water power, .....	12,695,941 00
North-east Branch and Perkiomen, above Schwenksville, by gravity, .....	13,674,493 00
Delaware river, at Lardner's Point, pumping by steam, .....	13,766,085 00
Delaware river, at Point Pleasant, pumping by water power and by steam, .....	15,475,262 00
Tockicon creek and Neshaminy creek, by gravity, and Delaware river, at Point Pleasant, pumping by steam, .....	17,174,998 00
Tockicon creek, by gravity, and Delaware river, at Point Pleasant, pumping by steam, .....	17,717,025 00
Perkiomen, above Green Lane, and Lehigh affluents, by gravity, .....	18,633,400 00
Delaware river, at Water Gap, by gravity, .....	19,278,061 00
Delaware river, at Point Pleasant, pumping by steam, .....	19,622,543 00

Therefore, to supply the city with 90,000,000 gallons daily of good water, which is the present consumption, the cheapest project is to pump the Delaware water at Lardner's Point, the next is the Neshaminy scheme, and the third is pumping Delaware water at Point Pleasant.

To increase the supply to 150,000,000 gallons requires a total expenditure of about \$12,139,000, if the Perkiomen water only is used, and a total expenditure of about \$17,635,000, if no water is taken from below Green Lane, and the deficiency supplied from the eastern affluents of the Lehigh river above the Lehigh Gap.

On the Delaware areas the water stored from the Neshaminy and

Tohickon creeks together could furnish an amount up to 156,000,000 gallons at a cost of \$13,846,662. If, instead of using the Neshaminy water, Delaware water is pumped at Point Pleasant the cost would be \$14,275,000, if steam, and \$11,215,000, if water power is employed. To supply Delaware water only would cost, if pumped by steam at Point Pleasant, \$16,355,000, and at Lardner's Point, \$10,415,000.

For supplying 150,000,000 gallons daily, therefore, from beyond Lardner's Point, the project contemplating the use both of the Tohickon and Delaware water at Point Pleasant, pumping the latter by water power is the least expensive one.

Finally, to increase the supply to 210,000,000 gallons, the Point Pleasant scheme, as already stated, is again the most economical one, besides furnishing decidedly the best quality of water.

It therefore appears with sufficient clearness, I think, that whenever good water can no longer be obtained from Lardner's Point by the pumps which it may be considered advisable to place at this point, the city should build an aqueduct to Point Pleasant, pump Delaware water by water power, and supplement the quantity as it may become necessary by storing the water from the Tohickon creek, first in the lower, and then the upper reservoir.

After the aqueduct is taxed to its full capacity, at which time it will probably be necessary to go to the Blue mountains for an increased supply, another aqueduct will have to be built. It is premature, I think, to say definitely at present whether this second aqueduct extending to the Blue mountains should go by way of the Delaware or Lehigh river. If the South Mountain region should preserve its present character, there can be no doubt that it should extend by way of the Perkiomen valley, and, after receiving the South Mountain water at Green Lane, follow up the Lehigh river. The cost of this scheme, which now is relatively greater than that of others, would then probably be less. The Point Pleasant aqueduct could later also be carried to the mountains whenever the quality of the water, owing to the pollution from the Lehigh river, becomes objectionable. And its extension would then most economically be to the Delaware Water Gap.

It is better to build two separate aqueducts in this way than only one with double the capacity, because in the latter case the risk from accident becomes greater. New York, Boston, Washington and Paris have each two. London has even more.

When the above-mentioned aqueducts are built, the city of Philadelphia will be supplied with the best water obtainable in Eastern Pennsylvania.

Respectfully submitted.

(Signed)

RUDOLPH HERING.

NOTE.—After the topographical surveys of Bucks county had been plotted (during the spring of 1885), it became apparent to me that in

addition to the various projects outlined in previous reports, another one was feasible, namely, a diversion of the waters of the Tohickon creek, by means of a dam situated just below the mouth of the Haycock creek, through a comparatively short tunnel near Keelersville, into the north-east branch of the Perkiomen. By this diversion, it would be possible to substitute the Tohickon water for that of the West Swamp creek in the Lower Perkiomen scheme, which would not only improve the quality of water otherwise obtained, but also reduce the cost, as the inhabited territory between Green Lane and Schwenksville would not require to be flooded.

While I examined this scheme in a general way, I did not work it up in detail for comparison with those that had been previously indicated for the following reasons: There were no features which promised superiority over the Delaware-Tohickon project. Inasmuch as the appropriation available for the investigation was barely enough to complete the same as originally outlined, it was therefore not considered advisable to extend it any further. Such a course was thought proper, particularly on account of the marked disadvantages possessed by this project over the other one. The sewage and surface water from Quakertown could not be diverted from the city's supply, but might add pollution to the same. The North-east Branch valley contains the two growing centers of population—Sellersville and Perkasie—which would still further add to the danger. In view of the constantly accumulating evidence that it is to a certain degree dangerous to have even small towns drain into a stream which subsequently requires impounding, this circumstance must be given considerable weight. The general physical characteristics of the North-east Branch watershed are also inferior to those of the Tohickon, shown particularly in the heavy discoloration of its water after rains, so that the Tohickon water would be deteriorated by admixture with that of the North-east Branch. The Tohickon water at Point Pleasant compares favorably with the water of the Upper Perkiomen, while if diverted, as above, it would be less good than at the Point, because it is deprived of considerable aëration which it gets in reaching the same, and of the excellent water received on its lower course through a rugged and sparsely populated region. Further, it is a well known fact that running water from large streams is healthier and generally more palatable than water which has been stored in reservoirs, and in this instance the large quantity of Delaware water which is available through the Point Pleasant project would furnish, as shown by the analysis, a much superior supply to that of any of the Lower Perkiomen affluents, even before storage. Finally, the estimated cost of the "diversion," as against that of the scheme recommended, was not found to be in its favor.

The completion of the Manayunk intercepting sewer, which was de-

signed to guard the Schuylkill river against pollution within the city limits, will materially improve the present water supply of Philadelphia. If the river is kept open during the winter by cutting the ice, and therefore permitting more aeration, the condition will be still more improved; and if the projected Cambria and East Park reservoirs are constructed, permitting a temporary cessation of pumping during freshets in the river, which bring down the organic matter and other filth deposits on its bed at ordinary times, the quality of water will be such that the construction of any new works furnishing the city with Delaware water can be awaited for some years without anxiety.

When the aqueduct recommended to supply the city with water from the Blue Mountains is to be built, the question should be considered whether the smaller cities lying between the mountains and Philadelphia could not likewise make use of it. Easton, Bethlehem and Allentown may find it difficult in the future to secure as good water from local points, and may be willing to contribute towards increasing the capacity sufficiently to supply their wants.

To bring the statistics of water works within the State, as furnished in the first report of this Board, up to date, the following data are added, taken from J. J. R. Croe's Statistics of American Water Works, edition of 1886:

EXTRACTS from Croes' water works tables. Water supply of cities and boroughs in the State of Pennsylvania.

NAME	Population 1880.	Water works built in—	By whom owned.	Source.	Mode of supply.	Cost.	Daily consumption.	Officers.
Athens and Sayre.	2,321	1884	Company,	Susquehanna river,.....	Pump to reservoir; gravity direct.	.....	450,000	H. Elmer, President.
Birdsboro',.....	1,705	1888	Company,	Surface water,.....	Gravity.	450,000	.....	J. Schelble, Superintendent.
Boyetown,.....	1,069	.....	.....	Springs,.....	Pump direct.	.....	Unknown.	W. J. D. Marlin, Secretary.
Brookville,.....	2,186	1888	Company,	North Fork creek,.....	Pump.	25,000	.....	C. A. Blakeslee, Superintendent.
Centralla,.....	1,896	.....	Company,	.....	.....	.....	.....	H. F. Bigler, Secretary.
Cleatfield,.....	1,809	1888	Company,	Moose creek,.....	Gravity.	41,000	Unknown.	.....
Conemaugh,.....	8,488	.....	.....	.....	.....	.....	.....	.....
Connellsville,.....	3,609	1883	Company,	Springs,.....	Gravity.	60,990	.....	R. C. Greenland, Superintendent.
Corry,.....	6,277	1886	Company,	Hare creek,.....	Pump to reservoir.	150,000	170,000	E. Morrison, Secretary.
DuBois,.....	2,716	1888	Company,	Surface water,.....	Pump direct.	2,200	.....	H. W. Janett.
.....	2,716	1871	Public,	Springs,.....	Gravity.	15,000	Unknown.	J. Haupt, Secretary.
.....	1,707	1883	Company,	Little Mahanoy creek,.....	Pump to reservoir.	20,000	.....	J. Burton, Superintendent.
.....	624	1883	Company,	Artesian well,.....	Pump to reservoir.	15,000	60,000	S. P. McKee, Secretary.
.....	1,614	1884	Company,	Allegheny river,.....	Pump to tank.	10,000	12,000	J. C. Daily, owner.
.....	159	.....	.....	.....	Pump.	.....	.....	P. Herdic, manager.
.....	4,125	1886	Company,	Stone creek,.....	Pump to reservoir; pump direct.	60,000	.....	.....
Jermyn,.....	1,541	1884	Company,	Aylesworth creek,.....	Gravity.	23,350	.....	W. S. Hutchings, Secretary.
Jersey Shore,.....	1,411	1885	Company,	Springs and surface water,.....	Pump.	40,000	100,000	E. D. Trump, Treasurer.
Longthorne,.....	553	1886	Company,	Springs,.....	.....	120,000	.....	F. K. Wright.
Lansdale,.....	768	1888	Company,	Artesian well,.....	Pump to tank.	15,800	.....	W. D. Heebner, President.
Lansford,.....	2,206	1872	Company,	Surface water,.....	Gravity.	52,000	.....	W. D. Zehner, Superintendent.
Latrobe,.....	1,915	1886	Company,	.....	Pump direct.	.....	.....	J. C. Head, Treasurer.
Lewisburg,.....	3,060	1888	Company,	West branch of Susquehanna river,.....	Pump to tank.	37,577	120,000	S. D. Bates, Superintendent.
Lykens,.....	2,154	In progress.	Company,	Rattling creek,.....	Gravity.	.....	.....	J. R. Fell, Superintendent.
Mechanicsburg,.....	3,016	1887	Company,	Springs,.....	Gravity.	.....	.....	A. Selfert, Superintendent.
Mercer,.....	2,344	1886	Company,	Ground and surface water,.....	Pump to tank.	20,000	.....	.....
Milton,.....	2,102	1888	Company,	Susquehanna river,.....	Pump to reservoir.	50,000	800,000	H. R. Frick, Secretary.
Monongahela,.....	2,904	In progress.	Company,	Monongahela river,.....	Pump to reservoir.	.....	.....	.....
Nazareth,.....	984	.....	.....	.....	.....	.....	.....	.....
New Bethlehem,.....	773	1883	Company,	Red Bank creek,.....	Gravity.	11,775	15,000	E. V. Marsh, President.
North-East,.....	1,386	.....	Public,	Springs,.....	Pump to reservoir.	3,500	50,000	G. W. Blaine, Secretary.
Orwigsburg,.....	762	1885	Public,	.....	Gravity.	15,000	.....	T. J. Reed, Superintendent.
Palo Alto,.....	1,588	.....	.....	Supplied from Pottsville,.....	.....	.....	.....	.....
Phillipsburg,.....	1,779	1881	Company,	.....	Pump.	40,000	200,000	W. E. Irwin, Secretary.
Port Carbon,.....	2,946	.....	.....	Supplied from Pottsville,.....	.....	.....	.....	.....

## WATER SUPPLY OF CITIES AND BOROUGH—Continued.

NAME.	Population 1880.	Water works built in—	By whom owned.	Source.	Mode of supply.	Cost.	Daily consumption.	Officers.
Providence,	4,140	.....	Company,	.....	Gravity,	.....	.....	J. B. Fish, Superintendent.
St. Clair,	4,730	.....	.....	Supplied from Pottsville,	Gravity.	.....	.....	E. J. Robinson, Superintendent.
Stark,	5,624	1885	Company,	Chenango river,	Pump to reservoir,	165,000	300,000	J. Finch, Superintendent.
Sharon,	3,684	.....	Public,	.....	Pump direct,	.....	.....	B. F. Landis, Superintendent.
Sharpsburgh,	1,058	In progress.	.....	.....	.....	.....	.....	A. B. Armstrong.
Shicklunty,	2,058	.....	Public,	Spring,	Gravity,	28,000	.....	S. T. Slaymaker, Superintendent.
Shippensburg,	2,213	.....	.....	.....	Gravity,	.....	.....	C. H. Dieffenbarger, Supt.
Smithport,	4,524	.....	Company,	Surface water,	Pump to reservoir,	110,000	400,000	P. Brigham, Owner.
South Easton,	4,077	1884	Company,	Surface water,	Gravity,	30,000	.....	W. Dunmeyer.
Sunbury,	2,678	1870	Company,	Surface water,	Gravity,	.....	.....	C. H. Seaton, Superintendent.
Syrone,	2,678	1886	Company,	Spring,	Gravity,	4,000	.....	W. C. Kress, Superintendent.
Tyngsboro,	400	.....	.....	River,	.....	.....	.....	.....
Ulysses,	171	.....	Company,	Springs,	Gravity,	.....	.....	.....
Union City,	3,345	1883	.....	.....	.....	.....	.....	.....
Uniontown,	1,888	.....	Company,	Supplied from Lykens,	Gravity,	85,000	Unknown.	.....
Waynesboro,	2,228	1886	.....	.....	.....	.....	.....	.....
Wellaborough,	2,228	.....	.....	.....	.....	.....	.....	.....
Wiconisco,	2,221	.....	.....	.....	.....	.....	.....	.....

\*See Athens.

The investigation of river pollution in the State has received another instalment through the Philadelphia water department, under Col. William Ludlow, chief engineer, in connection with the surveys for a future water supply. Mr. Dana C. Barber made a sanitary survey of the Lehigh and Delaware rivers, similar to the one made of the Schuylkill valley, and contained in the last report of this Board. The territory examined covers a large area, and the information is of value to the State as a record of the sanitary conditions of these water sheds. The report is, therefore, appended.

**Report on Sanitary Surveys of Proposed Future Supply Watersheds.**

PHILADELPHIA WATER DEPARTMENT,

*February 4, 1885.*

MR. RUDOLPH HERING,

*Engineer in charge of Surveys for Future Supply :*

SIR: I have the honor to submit the following report of sanitary surveys of proposed future watersheds, made by me under your direction during the past season. These surveys comprise the whole of Tohickon valley, the valleys of the Neshaminy, and the Little Neshaminy above their confluence, together with that of Mill creek, above Forrestville, and the Perkiomen, above Schwenksville, with the Northeast Branch and the Skippack, above Evansburg.

The object of this investigation was to ascertain to what extent the natural advantages of the valleys in supplying water of satisfactory purity have been altered by habitation and industries.

The valley of the Tohickon was investigated in June, by following the stream on horseback by the nearest roads from near its sources to its mouth, and by interviewing various parties well acquainted with the whole valley.

The head waters of the stream are in a very flat farming country, about the borough of Quakertown (about 23 miles from its mouth), which village it drains, so far as it is drained at all. Being very nearly level, a great part of the rain-fall is absorbed, and comparatively little surface drainage reaches the creek without being filtered through the soil. The town has a population of about 1,900, but contains no manufacturing factories having foul drainage to the creek, except a small creamery which discharges its liquid waste—cheese-whey, buttermilk and wash-water—into a ditch, about one hundred feet long, emptying into the creek. In summer, the grass grows luxuriantly along the ditch, consuming much of the organic matter which is discharged only periodically, so that the stream receives but little pollution from this source, which, however, causes a local nuisance, much complained of by the residents in its vicinity.

The town has no public water supply, but obtains water from wells and by collecting rain water. The latter is mostly used on account of



the hardness of the well water, which also contains some iron from bog-ore.

The borough government contains no health board, so that complete vital statistics cannot be given, but the following information was obtained from Dr. Moyer, one of the leading physicians: The mortality is very small, and largely from old age. Pulmonary consumption is the most prevalent disease, and pneumonia, which was formerly very rare, is increasing. There has been no epidemic of diphtheria for fifteen years, and scarlet fever is very rare, while cholera infantum is almost unknown. There was formerly much typhoid, but it has been largely reduced, Dr. Moyer thinks, by artificial drainage of the meadows about the town. He also stated that Richland township, which contains the borough of Quakertown, and is drained entirely by the head-water tributaries of the Tohickon, is exceptionally healthy. It consists almost entirely of farming land, highly, cultivated. One Quakertown dealer in fertilizers sells 75 tons of artificial manure per year, most of it going to the Tohickon watershed. On account of the flatness of the land, probably but little of the fertilizing material reaches the streams directly.

Below Richland township, the greater portion of the Tohickon watershed is contained in Rockhill, Bedminster and Haycock townships. This is also largely farming country, though but little artificial fertilizer is used. A mile or two below Quakertown, the creek loses the character of a meadow stream, has steeper slopes and considerable hard wood growing on its banks. It continues broad and sluggish, with a great quantity of algae in its bed for two or three miles further, when its banks become more densely wooded and rugged.

At Keelersville, a small hamlet about seventeen miles from the mouth, is a creamery about an eighth of a mile from the creek. Most of the waste seemed to be absorbed in flowing through the fields. A small tannery at the same place drains over the meadows a quarter of a mile.

The only sources of pollution discovered below this point were two creameries and one tannery. The latter (Atterholt's) is on a small brook about half a mile from the creek, above Tohickon post-office, some twelve miles from the Delaware. It is larger than the preceding and has direct drainage. Moreover, dead animals from the surrounding country are taken to this point and, buried in a manure pile below the tannery, allowed to rot, draining into the stream. This is the same place referred to by Dr. Leeds in his report of last year as being probably a main cause of the large amount of albuminoid ammonia found in the Tohickon samples.

One of the creameries referred to, on Haycock creek, about two miles from its confluence with the Tohickon, a mile below the tannery, gives but little pollution, but the other, in Bedminster township, on

Wolf run, half a mile from the Tohickon, six or seven miles from its mouth, is uncommonly bad in summer, when the waste-whey and buttermilk is not taken by the farmers.

Haycock creek, referred to above, drains the north-eastern slope of Haycock mountain (640 feet above the Tohickon), which is rough and wooded, and surrounded by several square miles of uncultivated land. The eastern side of the valley of the same stream is also about half covered with wood. Otherwise, the watershed is almost entirely occupied by farms, except along the Tohickon itself, whose banks continue to become steeper and more rough. In the last two miles, the stream falls 150 feet, forming rapids and cascades over a very rocky bed. Above these cataracts for fifteen miles, the fall averages about ten feet to the mile. The larger tributaries, from Bedminster township, have a fall of twenty-five feet to thirty feet per mile.

In general, the sources of the Tohickon are in a rich farming country of nearly level land, on which are used large quantities of artificial manure; while the lower twenty miles, and the principal tributaries in this portion, are rapid streams, generally over a rocky bed, draining a gently sloping country, for the most part cultivated (except Haycock mountain and vicinity) though with but little artificial manure. In collecting samples of this water near its mouth at Point Pleasant, every fourth week from July 2 to December 17, I have found the water to be almost without exception very clear and pleasant to the taste. The total population of the Tohickon watershed is about 10,000.

The valley of the Neshaminy, including the Little Neshaminy and Mill creek, was, for the most part, investigated in June, by following the streams on horseback by the nearest roads from their sources to the Forks (confluence of the Little Neshaminy with the main stream).

The Neshaminy has its most distant sources (about twenty miles from the Forks) in the North Branch and Pine run, uniting with the main stream at Chalfont, about ten miles above the Forks. Both are meadow streams, draining long, straight valleys, for the most part highly cultivated. The slopes to the North Branch are quite uniform and direct, so that the rainfall runs off quickly, leaving this stream nearly dry after droughts, while Pine run is fed by never-failing springs. No manufactories or other special source of pollution were discovered in either of these valleys, except the following creameries: One near Deep run, about six miles above Chalfont; one two miles below, near the crossing of the Doylestown and Dublin turnpike, and one at Woodlawn, on a small brook entering the North Branch about a mile and a half above Chalfont.

At New Galena, about three miles above Chalfont, is an abandoned lead mine, where very rich ore has been found, but no mining done for years.

The main stream above Chalfont is mostly through gently sloping farm lands, less fertile than the tributary valleys above named, and the highest portion of the watershed, in the southern part of Hilltown, is very irregular and rocky. The stream from this region drains a small tannery on the county road one mile above Line Lexington, and a creamery near Colmar station, which are the only special sources of pollution discovered above Chalfont.

Below this village the Neshaminy is a broad, shallow stream, with sandy or rocky bed, and a gentle fall about twelve feet to the mile. The farm lands which slope moderately to the creek are not naturally rich or highly cultivated. On one side of the stream, the bank is frequently steep and wooded. A small creamery near New Britain, and another near Chalfont, and a very large one at Jamison's Corners, Warwick township, on a small brook one and a half miles from the creek and five miles from the Forks, are the only sources of pollution discovered.

The borough of Doylestown, though in this watershed, causes no pollution of the stream, being on a hill and using so little water that all is evaporated before reaching a water-course. Nor does it seem likely ever to become a source of pollution of the Neshaminy or any other stream.

The Little Neshaminy drains a farming country not very rich, but nearly all cultivated, with small areas of woodland. The surface is gently undulating, and the fall of the stream considerably greater than in the Neshaminy. No sources of pollution were discovered in its watershed, which in general is better adapted for water supply than the main stream.

Mill creek, entering the Neshaminy just below the Forks, has a more irregular and rugged valley than any of the streams heretofore mentioned, containing more pasture and woodland, with many springs and no special sources of pollution.

The population of the Neshaminy watershed (including Mill creek) is about 16,400.

The valley of the Perkiomen above Schwenksville, together with the tributaries North-east Branch and Skippack entering below that point, was investigated mostly in November, by driving over the roads nearest the streams throughout the watershed, but the upper portion of the North-east Branch was followed in June on horseback.

The sources of the main stream, about twenty miles above Schwenksville, in the eastern corner of Berks county and the southern corner of Lehigh county, are mountain springs of a very uniform flow, yielding their full supply when the tributaries below are nearly dry. They flow through irregular valleys, largely wooded on the hillsides and but little cultivated. After reaching the broader valleys below, in Montgomery county, they assume the character of meadow streams through

intervals of richer farming land, with considerable wood on the hills on either side, some of which are quite steep and rough. This, in general, is the nature of the main valley all the way to Schwenksville, though the wood land decreases and the cultivated land increases in proportion towards its mouth. The valley is sparsely populated and there are few towns of any size. The villages are generally scattered collections of separate houses at some distance from the creek, containing few, if any, manufactories. The only establishments having foul drainage directly into the main creek above Schwenksville (so far as discovered) are a creamery at Hossensack, Lehigh county, and one at Perkiomenville. A small paper mill (using paper rags only for unbleached wrapping paper) is located on the West Branch, near the Berks and Montgomery county line, about twelve miles above Schwenksville.

The Macoby, entering at Green Lane, drains a moderately rich farming country but little wooded, with gentle slopes to intervals along the streams. At Greenville is a creamery, and another at McLean's station, both near the creek.

The East Swamp creek, entering the Perkiomen below Green Lane, has the wildest and most rocky valley of any of the streams investigated. From Sumneytown to the Bucks county line (four miles), the land along the stream is almost entirely uncultivated and with scarcely any inhabitants, being covered with boulders and stunted trees. The sources in Bucks county are more level and drain some farming land, as also the lower part below Sumneytown. In the former are three creameries at Trumbauersville, Milford Square, and Spinnerstown.

Rich Valley creek, joining the East Swamp creek at Sumneytown, has not so rugged a valley as the preceding, having more intervals along the stream and considerable wood land. The soil is rocky, but quite fertile. A small tannery is located near its confluence with the Swamp creek.

West Swamp creek, entering at Zieglersville station, about a mile above Schwenksville, drains a large area of farming country, mostly of quite flat or gently rolling land. The lower three or four miles of the main valley is more irregular, with considerable pasture and wood land, but the fall in this lower portion (about fifty feet in three miles) is not sufficient to effect so complete an oxidation of organic (vegetable) impurities received from the swampy land in the upper part as occurs in the Tohickon, which it somewhat resembles.

There is a small tannery and a creamery at New Hanover, a creamery near Fagleysville, and another near Obelisk post-office (Frederick township), all on small branches of the main stream; also, near the sources, in Berks county, a small woolen mill and two small tanneries, and a small tannery near the main stream within a mile of its mouth

The valley of the North-east Branch does not greatly differ in general from the West Swamp creek, the upper portion of the creek being a meadow stream, generally with a pebbly or rocky bed, which becomes more clayey and muddy, broad and sluggish in the middle portion between Tylersport and Branchville. The watershed much resembles the Neshaminy, above described, but the water appeared to be not so good at the time of my investigation in June. The stones in the bed of the upper middle portion were covered with algæ, and the horse refused to drink at the fords though thirsty. The lower portion contains considerable meadow intervals lands with gently sloping farms well cultivated. A manufacturer of phosphates near Sellersville sells seventy-five tons per year, a large part of which goes on this watershed. A creamery near Dublin, one near Sellersville, one near Tylersport, and one near Salfordville are the only sources of special pollution discovered. The first three have more or less drainage into the stream.

The Skippack, entering two or three miles from Schuylkill, drains a large area of very flat and gently sloping farming land. That portion above Evansburg only was investigated. This stream is less suited for a water supply than any investigated, containing much swampy land along the stream and very gentle slopes, even to near the sources. Most of the first rainfalls after dry weather are absorbed before reaching the streams, so that this creek was very low when others above, having steeper slopes, were high. The only manufactory found draining foul waste products into this stream was a small creamery on a branch nearly east of Lederachville.

In general, you will observe the Perkiomen watershed above West Swamp creek is fairly well suited for a water supply of superior quality; the West Swamp creek and North-east Branch are inferior—the former much so—while the Skippack is quite unsuitable.

The population of the Perkiomen watershed above Schwenksville, excluding the North-east Branch and the Skippack, is about 21,600, and of the North-east Branch 8,500.

Very respectfully,

DANA C. BARBER, *Assistant Engineer.*

**Sanitary Survey of Proposed Future Supply Water-Sheds.**

PHILADELPHIA WATER DEPARTMENT,

*February, 25, 1886.*

Mr. RUDOLPH HERING,

*Engineer in charge of Surveys for Future Supply :*

SIR: I have the honor to submit the following Report of a Sanitary Survey of the Delaware valley above Point Pleasant, including the Lehigh, made by me, under your direction during the past year.

Although the cost of two schemes for taking the Delaware water below Point Pleasant—at New Hope and Yardleyville—has been estimated, I was not instructed to make a detailed survey of the valley below that point, since these schemes are not considered among the best. But the general features of the lower portion covering these additional schemes may be briefly stated, as follows:

The valley is narrow, especially on the Pennsylvania side, and contains but few towns or villages. The largest is Lambertville, about nine miles from Yardleyville, having a population of over 4,000, with public water supply and partial sewerage.

It contains some large manufactories, and is evidently the source of considerable pollution. On the other side of the river, opposite Lambertville, is New Hope, with a population of about 1,200, favorably situated in general for good surface drainage, while many houses on the line of the canal use that as a sewer. Just below the town is a large paper mill

At Lumberville, 14 miles above Yardleyville, a village of perhaps 300 inhabitants, there is no notable pollution.

The supply of Trenton is taken from the Delaware about four miles below Yardleyville, which has a population of 900, and the water is generally considered of superior quality. In the latter part of the spring of 1883, however, and at the same season in previous years, the water had a fishy taste and odor, very offensive to some, lasting about ten days. No thorough investigation was made to ascertain the cause of this, but it is believed to have come from the river and to have had no connection with the reservoir.

The survey above Point Pleasant was made by following the principal streams nearly to their sources, visiting all the large towns, and most villages having a population of over 500 and also many smaller manufacturing hamlets, and investigating all special sources of pollution by examination and by interviewing manufacturers, town surveyors and others best acquainted with the streams and their pollution. Most of the field work was done in the months of August, September and October, but a portion of that in the Upper Lehigh and Lackawaxen valleys was necessarily postponed until the present month.

The whole area drained by the Delaware river and tributaries above

5 BOARD OF HEALTH.

Point Pleasant (including the Lehigh) is about 6,793 square miles, of which about 795 are in the State of New Jersey and 2,623 in the State of New York. The drainage area of the Delaware above the Water Gap is about 4,446 square miles, and of the Lehigh watershed 1,373 square miles.

The population\* of the whole area drained by the Delaware above Point Pleasant is about 399,150, of which 58,365 are in New Jersey and 79,400 in New York. The population of the Delaware watershed above the Water Gap is about 141,000 and of the Lehigh 164,000.

The sources of pollution will be considered in order going up stream.

Frenchtown, 7 miles above Point Pleasant, on the New Jersey side, is a trading village of 1,060 inhabitants, situated on gentle slopes near the river. Half a dozen shops and houses discharge waste water directly into a small creek flowing through the village, which also drains a small cemetery. A few houses have privies near the bank of the creek. There are no manufactories of note, and the dwellings being scattered and having no drainage, but little of the domestic sewage reaches the river.

At Uhlerstown, a small hamlet opposite Frenchtown (on the Pennsylvania side), half a dozen houses have a little waste water drainage into the canal (flowing past Point Pleasant) with privies near the bank, and at a canal boat yard a few men—not over eight or ten—use a privy draining into the canal.

At Milford, on the New Jersey bank of the Delaware, 11 miles above Point Pleasant, about 40 houses are situated near a small creek flowing through the town, of which 25 privies located favorably to indirect drainage into the stream. Twenty are favorably located for drainage of waste water into the stream over the ground and two or three for direct drainage. Nine small stables near the creek are partially drained into it. There are a few small manufactories, but none have foul drainage. The village has a population of perhaps 300.

At the mouth of Durham creek, 17 miles above Point Pleasant, on the Pennsylvania side, are the Durham Iron Works, said to be the oldest in the country (founded in 1727). Five hundred (500) men are employed here, of whom 40 use privies over the creek. The dwellings of the employes are not favorably situated for drainage into the stream. One-half of the ore used here is from mines near the works (red hematite). The superintendent said that this was without doubt the only ore in the Delaware valley, on the Pennsylvania side, excluding the Lehigh.

At Reiglesville, one mile above the preceding, the Musconetcong river, the first large tributary above Point Pleasant, enters the Delaware from the State of New Jersey, running for most of its course

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\*Estimated from comparison of Ninth and Tenth National Census, and local data.

through a narrow belt of limestone formation. It rises in and about Lake Hopatcong, 40 miles from its mouth, and drains a narrow valley naturally well fitted for water supply. As yet there are few villages of any size in the valley, although the Morris canal (from Phillipsburg to Jersey City) and the Morris and Essex division of the Delaware, Lackawanna and Western railroad traverse the upper portion of it, near the stream, and the Central Railroad of New Jersey ten miles of the lower portion. The only villages having a population of over 200 are Bloomsburg (600), Hackettstown (2,650), and Stanhope (700), of which Hackettstown, 28 miles from the Delaware, is the only one having a public water supply. This is a gravity supply from a mountain stream (tributary of the Musconetcong), giving an average pressure of fifty pounds. The daily consumption is estimated at 100,000 gallons. There are no sewers, except a short culvert for surface-drainage, and the houses are scattered at some distance from the stream, so that the pollution from domestic sewage is comparatively slight for a town of its size. There are no manufactories having foul drainage.

On the lower part of the stream are the following manufactories :

At Reiglesville, near the mouth, a paper mill, using three tons of jute butts per day, 25 bushels of lime, 600 pounds of chloride of lime, 300 pounds of alum and 20 pounds of soda ash.

At Finesville, one mile above the mouth, an edge tool works, employing thirteen men, who use privies over the raceway.

A large pottery, one and a half miles from the mouth, not in operation for several years.

A paper mill, four miles from the mouth, using 10 tons of jute butts, 100 bushels of lime, 3,000 pounds of chloride of lime and 1,000 pounds of alum. Sixty (60) employés have water-closet drainage to the stream.

The intervals and gentle slopes along the Musconetcong are generally cultivated, but the hillsides are for the most part wooded.

Pohatcong creek, entering the Delaware about 20 miles above Point Pleasant, drains a similar valley of about half the length of the Musconetcong. The only town of note in its watershed is Washington, on a short branch about 15 miles from the Delaware. It has a population of about 2,300, supported mainly by manufacturing, the principle products being organs and shoes. One of the principle hotels and a large office building have complete drainage to the creek by pipe-sewer; with this exception, there is no direct drainage other than from a tannery (using 1,000 cattle hides per year and a few sheep skins, also washing a little wool) and two or three small slaughter-houses. A short section of the principle business street is frequently washed by hose in dry summer weather, and drained through the gutters to the creek. A few houses have gutter drainage for waste water.



The town has a public water supply from springs three miles away, through a 12-inch main. About 120 private houses have water attachments, but the amount consumed could not be learned.

The Pohatcong valley is quite free from manufactories (except in Washington, as above noted), is generally sparsely populated, and seems to possess small inducements to any considerable increase.

The first large town on the Delaware is Phillipsburg, New Jersey, 25 miles above Point Pleasant. It has a population of about 7,600, made up largely of the employés of the several railroads terminating or passing through, and the canal starting there. There are some large iron works and a few other manufactories (none having foul drainage), but almost the whole town has (in the absence of sewers) no direct drainage to the river. Most of the houses are situated on high and nearly level ground, on which there are but few streets and no natural water courses to the river. The comparatively small population on the steep approach from Easton (on the opposite side of the river) has good surface drainage, but most of the domestic sewage from the greater portion in the rear is absorbed before reaching the stream. Water is now furnished to a portion of the town by the Eastern Water Works, through a six-inch pipe, but an independent supply is contemplated. The death rate in 1884 was 18 per 1,000.

At a small village at the lower end of the town six or eight houses have privies on the bank of Lopatcong creek, and a dozen others throw slop-water and garbage into the same. A beer brewery on the opposite side of the river (below South Easton), producing about 1,500 barrels a year, drains into the canal (from Easton to Bristol).

The most notable pollution of the Delaware is from the towns of Easton, Allentown and Bethlehem, on the lower portion of the Lehigh, the largest tributary of the Delaware. Here, within a distance of seventeen miles, is a population of about 50,000 in towns favorably situated for good drainage. None of them, however, is sewered, and when the volume of the Lehigh is lowest and the amount of sewage proportionately largest, the Delaware canal receives probably fully one-third of the water of the Lehigh, and of this third it is estimated that one-half is carried past Point Pleasant.

Easton, on the north side of the Lehigh, at its confluence with the Delaware, 26 miles above Point Pleasant, is a town having a population of about 13,000. Bushkill creek borders the northern side, so that unusually good natural drainage facilities are afforded, especially as the population is for the most part quite dense. One public sewer (from the county jail—average population of 50) has a few connections with private houses and one hotel, affording complete sewerage for about 200 people. There are besides three culverts for surface drainage, which may also have a few house connections for wash water only. I estimate that one-fifth of the population, or 2,600, have

drainage for wash water through street gutters and culverts, of which perhaps one-sixth goes into the Lehigh.

In the dry weather of summer much water is used in washing the streets, and since the grades are quite steep much street dirt is carried to the river. The slopes are chiefly toward the Delaware and Bushkill creek, so that only about one-eighth of the area is drained into the Lehigh above the dam, comprising perhaps one-fourth of the population. The sewer above-mentioned discharges into the Delaware. The kitchen garbage collected is also dumped into the river (Delaware) at present, but it is intended soon to construct a furnace for cremating it. Privies are generally placed over leaching cesspools which also receive, from the better class of houses, water-closet sewage and kitchen and bath water. The most densely populated portion is on gravel formation where the cesspools seldom or never fill up. When they are cleaned the material is generally used in making fertilizers, but sometimes, when more convenient, is dumped into the Delaware.

The healthfulness of the town is considered good, but as no complete record of deaths is kept it is impossible to give exact figures. A prominent physician estimated the death rate at not over 15 per 1,000 annually, and said there were few cases of typhoid or other enteric diseases.

The public water supply is regularly from the Delaware just above the town. Formerly it was pumped from the Lehigh, just above the town, and this station remains as a reserve. The Delaware water was substituted for the Lehigh because softer and purer, though one of the leading physicians thinks that the Lehigh water caused no sickness when it was used. The Delaware water seems to be entirely satisfactory in quality, but gives some trouble in pumping on account of tan-bark and other small vegetable refuse which it contains at times. The total quantity supplied, including that to Phillipsburg, averages about one million gallons per day. In addition to the above general supply about two hundred families have an independent supply of spring water.

Besides the pollution of the Delaware by street and domestic drainage, there are the following special sources in Easton proper:

On Bushkill creek near its mouth are several small butcher shops, which (in all) slaughter about 40 cattle, 30 calves, and 90 sheep and lambs per week, besides many hogs in winter, and drain directly into the creek, near them is a stable containing six or seven horses draining directly into the stream, and several others in directly.

A calf kid manufactory on the Bushkill, half a mile from its mouth, treats 25 dozen skins per week and discharges the liquid waste directly into the creek; it is of the worst character but not large in amount.

About a mile from the mouth of the Bushkill are two privies over the stream, used by perhaps 15 people, and a stable on the bank for eight or ten horses.

A beer brewery, producing 10,000 barrels per year, drains into the Lehigh, and a smaller one (3,000 to 5,000 barrels) into the Bushkill. At the former place 15 men use a privy near the river bank and perhaps ten more use another belonging to an oil works near by.

From the town gas works, on the Bushkill, but little waste seems to escape into the stream, the tar being sold. From 50,000 to 75,000 cubic feet per day are produced from coal.

The Easton cemetery occupies a hill around which winds the Bushkill creek, affording excellent drainage for the greater portion of its area.

Bushkill creek, entering the Delaware at Easton, drains a considerable area of farming country, containing a few small hamlets but no town of any size. At Wind Gap, however, a station on the railroad between Bangor and Bethlehem, slate quarries are now being opened, which seem likely to build up quite a town at that point.

South Easton, an independent borough on the other side of the Lehigh, has a population of about 5,000, wholly in the Lehigh watershed but on account of the entire absence of sewers and a public water supply and the scattered state of the population, comparatively little domestic sewage enters the river. Perhaps 50 houses near the river have partial drainage through street gutters for wash water. A water supply is contemplated from springs back of the town.

The principal pollution at this place is from the following manufactories along the river and canal :

At a cotton and woolen mill, draining partly into the river and partly into the canal, 30 pounds of indigo, 40 pounds of catechu and half a pound of aniline dyes are used per day. Two hundred operatives use water closets discharging directly into the stream.

At a wire mill, between the river and canal, 4,660 pounds of oil of vitriol are used per day, and the waste discharged into the Lehigh. Water closet drainage from 250 men also goes into the river.

At another wire mill the waste from 900 pounds oil of vitriol per day is discharged into the canal, and 35 men use privies over leaching cesspools from 30 to 40 feet from the canal.

At an iron furnace near the above, which had been idle for some time, the workmen's privies were over the river.

At the shops of the Lehigh Valley Railroad Company 250 men use privies over cesspools from 30 to 100 feet from the canal. The urinals have direct drainage to the canal, as also the waste oil, etc., from the round-house. The privies of the Easton station (L. V. R. R.) are over a leaching cesspool about 100 feet from the canal. At Glendon, a borough of 700 or 800 population, two and a-half miles above Easton, 100 men in iron furnaces use privies over a raceway from the canal to the river. The dwellings are so situated as to have little or no direct drainage to the river.

At Redington, six miles from the mouth of the Lehigh, about 30 houses are within a hundred feet of the river, but contribute but little direct drainage.

Freemansburg, on the left bank of the Lehigh, eight miles from its mouth, is a small village (of 630 inhabitants), containing no manufactories, in which nearly all the houses are located on one nearly level street parallel to its canal, which lies between it and the river. So situated but little direct pollution comes from this place.

With the above exceptions there is no notable pollution of the Lehigh between Easton and Bethlehem, 10 miles from the Delaware and 36 from Point Pleasant.

Bethlehem proper, or old Bethlehem, is situated on the left bank of the Lehigh, just below Manockisy creek. Its present population is estimated at 5,800, the greater part of which occupies high ground having steep slopes to the streams. There are no sewers except one culvert for surface drainage only. Fæcal matter and much domestic waste water are received by leaching cesspools in cavernous limestone, containing fissures which serve as drains, so that the cesspools seldom or never fill up. According to a local engineer they are sometimes dug as deep as 80 feet to secure this natural drainage. A considerable part of the domestic waste water is carried through the gutters to the streams, chiefly to the Manockisy.

The public water supply averages nearly 400,000 gallons per day. It is pumped from a spring beside the Manockisy, about 1,500 feet from the Lehigh. No record of deaths being kept I was unable to obtain the rate, or even any estimate.

West Bethlehem, on the other side of the Manockisy, has a population of about 2,000, much more scattered than Bethlehem proper, and with no water supply, so that it has but little domestic drainage to the stream.

The following are sources of special pollution to Manockisy creek :

Several small butcher shops, slaughtering perhaps 25 cattle per week, and a small establishment for utilizing a portion of the butchers' offal—all having direct drainage to the stream; two small breweries, a small dye-house, a small stable, and privies used by about 25 people. These are in Bethlehem proper and West Bethlehem. Above the town there is but little direct pollution of the Manockisy. A railroad runs up the stream to its source, and thence across to the Bangor slate quarries (to be referred to later), but the population is mostly scattered over a farming country.

Bath, a town of 700 inhabitants, ten miles above Bethlehem, is the source of no notable pollution except a small tannery and the domestic sewage, a large number of the houses being favorably situated for good surface drainage to the stream.

South Bethlehem, on the right side of the Lehigh, has nearly or

quite as large a population as Bethlehem proper (now estimated at 5,600), though not quite so favorably situated, on the whole, for natural drainage—the bulk of the population being on comparatively flat land.

The public water supply is from the Lehigh, at present from a point opposite the heart of the town, and below much pollution, but about to be taken from a new station above town. The new works will also supply West Bethlehem. It is expected that 600,000 or 700,000 gallons per day will be required.

Six buildings of the Lehigh University, including a large chemical laboratory, situated on the hill-side back of the town, have complete drainage into cesspools which overflow into public sewers discharging into the Lehigh river above the intake of the present water supply. Two of them are occupied regularly by 35 persons, and over 300 more use the water-closets more or less. The sewers receive no other fecal matter, but afford surface drainage for the most densely populated portion of the town, taking much domestic waste water which is discharged into the street gutters.

A small brewery back of the university drains into a brook which is often dry in warm weather, so that much of the drainage is purified before reaching the river.

Besides these sewers, a culvert running through the town, open most of the way, receives the drainage of a public laundry, and more or less domestic waste water from about twenty houses. Twenty-five houses have privies near the wall of the culvert, while the water closets of a railroad office building, occupied by 20 or more persons, and the railroad station closet, used probably by more than 30 persons per day, have direct drainage into it.

The town is built up and is chiefly supported by the extensive iron works of the Bethlehem Iron Company, on the river at the lower end of the village. About 2,600 men are employed here. Their bath waste runs direct to the river, but the privies are over cesspools, from which the contents are removed. An inspection of the river bank opposite the works, however, showed that many, perhaps hundreds, went there instead of to the privies.

There is also large zinc works here, but no pollution from it was evident.

St. Luke's Hospital (30 to 50 patients), near the Lehigh, in the upper part of the town, drains its laundry water to the river by an open ditch in which much of the water is absorbed. All other drainage goes to the leaching cesspool.

On or near Saucon creek, entering a mile below South Bethlehem, are two villages, Hellertown (700), and Coopersburg (400), but the stream receives little pollution from them.

The largest town in the Lehigh Valley is the city of Allentown, on the right bank, at the intersection of the Little Lehigh and Jordan

creeks, 16 miles above the Delaware and 42 miles above Point Pleasant. The population is about 20,000, nearly all of whom live on slopes sufficiently steep to afford excellent city drainage. The city engineer estimates that one-third of the population drain all domestic sewage (including fæcal matter) into leaching cess-pools in cavernous limestone. He also estimates that one-tenth of the population use privies, the contents of which is removed to flats on an island overflowed by high water. Two public culverts assist in the removal of gutter drainage, which includes considerable house waste water.

The water supply (1,500,000 gallons per day) is from springs near the Little Lehigh, on the outskirts of the town.

According to official returns, the death rate in 1884 was 13.3 per 1,000. One-fourteenth of the total number of deaths was from typhoid fever, which "prevailed in various sections of the city to such an extent as to almost cause alarm."

The cemetery is located over cavernous limestone five feet below the surface.

In addition to domestic sewage, there are the following manufactories having foul drainage into the Lehigh or its tributaries in and around Allentown :

Three small breweries, having an aggregate product of ten or twelve thousand barrels per year; two or three small slaughter-houses on the Little Lehigh; a soap factory near the Lehigh discharging into it per day (on the average) the waste from 500 pounds of scraps from hides (i.e. the solid part remaining after boiling them to recover the oil) and five or six gallons of spent lye; also, 10 pounds of refuse from refining tallow.

At the public gas works, a local nuisance has been created by running all the liquid waste (except tar, which was sold) to a large pool back of the works. It had no known outlet, but being near both the river and Jordan creek, some of the liquid doubtless reached the streams after more or less thorough filtration. The Board of Health had just ordered this practice stopped, and the superintendent did not know whether it would hereafter be sent directly into the creek or into a well. The daily product averages over 40,000 cubic feet from coal.

Quite a large tannery on the Little Lehigh, on the outskirts of the town, had been idle for more than a year, and was not likely to resume work.

At a woolen mill near the preceding but little dyeing is done, but the operatives (80 to 100) use privies over the stream. Another large woolen mill near Jordan creek had been idle for a long time.

At a silk mill near the Jordan creek, the water-closets, used by 600 operatives, discharge into a cess-pool having an overflow to the stream.

At a pipe foundry on the Jordan creek, a hundred or more men use privies over the stream.

At a paint works and grist mill, near the mouth of the Little Lehigh, about a-dozen men use privies on the banks of the stream.

A small furnace below the town, near the river, had been idle a long time; when in use, perhaps 30 men use privies over a small stream.

There are extensive iron works on the river in the upper part of the town, but little pollution comes from them except the bath water of the employés, which, however, is not inconsiderable, as the number of men aggregates several hundred.

Three miles above Allentown, on Jordan creek, is a fertilizer factory having a capacity of 3,000 tons per year. The principal pollution is from boiling bones, the waste from which flows into a small land basin, said to have no outlet, and not reached by the creek except at times of freshet. Some of the deposit in the basin is sometimes taken out for manure.

The Lehigh county poor-house, situated on Cedar creek, a branch of the Little Lehigh, about three miles from Allentown, has direct water-closet drainage to the stream. The average population is about £00.

At East Allentown is a large tannery draining into the Lehigh, using 30,000 hides per year, 7,000 tons of bark, and 1,800 bushels of lime. It employs 50 workmen, half of whom use privies over the stream of waste water to the river. This stream, having an estimated flow of 20,000 gallons an hour at the time of my inspection, was very foul to the smell.

Catasauqua, 19 miles above the Delaware and 45 miles above Point Pleasant, is a manufacturing town of about 3,000 population, or, including suburbs and West Catasauqua, 4,500. It has a public water supply estimated at nearly 200,000 gallons per day, pumped from the river. The greater part of the population is favorably situated for surface drainage to the canal, including most of the domestic waste water. Cess-pools receiving faecal waste are in cavernous limestone.

The special sources of pollution in Catasauqua are chiefly the privies of the large manufactories, used by over 300 men. The largest works, however, has tight cess-pools. The same works waste a barrel of oil per week from its iron rolls. A small gas works near the canal is probably the source of some pollution.

At Hockendauqua, a mile and a half above Catasauqua, are two small furnaces, from which the most serious pollution is a privy over the river wall, used apparently by not more than 20 men. Below the furnace, a dozen houses on the bank have indirect drainage to the river.

Stemton, on the left bank, and Coplay, on the right, about a mile above the preceding, are small hamlets of scattered houses. At Coplay was a furnace not in operation, and at Stemton, car shops also idle at the time of my inspection. Above Coplay are two large cement works near the river, but giving no perceptible pollution.

Slatington, on the right bank of the Lehigh, 30 miles from the Delaware, has had a rapid growth within the last few years. due to the slate industry on which it is almost wholly dependent. The population is now estimated at over 2,000. About half the population has good surface drainage for domestic waste water by means of Trout creek flowing through the town, and some twenty houses have privies over the stream. One livery stable also has partial drainage to the creek. In the upper part of this town, a slaughter house and a few water-closets drain into a small branch of Trout creek. This is the last town below the Blue Ridge.

Aquanchicola creek, the first tributary above the Blue Ridge (entering from the north-east, 34 miles from the Delaware) drains the northern slope of the Ridge, absolutely without population on one side, and a sparsely settled rough farming country on the other.

Pohopocho, or Big creek, entering five miles above the preceding, drains a broader valley. with a somewhat larger population. Parryville, a village at its mouth, has a population of about 700, mostly dependent on an iron works, where 100 men have water-closet drainage to the river; also some 50 more in shops and dwellings on the stream.

Above Parryville the valley is mostly rugged and wooded for 12 miles, with few inhabitants except along the stream where the land is cultivated, generally on one side only. The tributaries from the north drain extensive mountain districts which are within three or four miles of the main stream in the lower ten miles of its course (excepting the last two). The upper portion of the valley is more open, with better farming land, and consequently more thickly settled, though having less than 50 inhabitants to the square mile. The best portion of the valley is between five and fifteen miles from the river, where the population is only about 35 to the square mile. The lower five miles are somewhat more thickly settled on account of nearer markets and railroads, though the country is but little, if any, better suited for agriculture than that above.

Weissport, a village on the left bank of the Lehigh, two miles above the mouth of Big creek, has a population of about 500, but the dwellings are scattered—extending back from the river for more than a mile—and there are no manufactories with foul drainage.

Leighton, just above Weissport on the opposite (west) side of the Lehigh, has a population of about 2,200, scattered over a large area, with no public water supply and but little direct drainage. It is a trading center for a large part of the surrounding country, and the home of many of the workmen in the railroad car shops at Packerton, a mile above. There 1,000 men have water-closet drainage to the river.

Next is Mauch Chunk, an important railroad and canal headquarters and summer resort, about 70 miles above Point Pleasant. Nearly the



whole population has complete sewerage to the river, but there is no pollution from manufactories. The population of east Mauch Chunk (1,900) is quite scattered, and has but little direct drainage.

West and north-west from Mauch Chunk are extensive coal mines in the mountains between the Lehigh and Susquehanna watersheds. This region was not visited, and the following information regarding it was obtained from men acquainted there and from maps :

Hazleton, the largest town in this region, is partly in the Lehigh and partly in the Susquehanna watersheds. I estimate 4,000 of its 7,500 population as in the Lehigh drainage area. It is 13 miles from the Lehigh by way of Hazel and Black creeks, and 90 miles above Point Pleasant. It is supported chiefly by the mining industry, but has also extensive manufactories of pianos and burial caskets.

Eight miles below, on the same stream (Black Creek), is the borough of Weatherly, a town of over 2,000 inhabitants, having extensive car shops.

Three miles up Nesquehoning creek, entering from the west two miles above Mauch Chunk, is the village of Nesquehoning, having a mining population of about 900.

About eight miles south-west of Mauch Chunk is a large mining settlement on the summit between the Lehigh and Susquehanna watersheds, but little of the drainage from this population reaches the stream directly.

A considerable quantity of sulphuric acid enters the Lehigh from the coal mines north-west and south-west of Mauch Chunk, but I was unable to get any estimate of its amount.

The next town on the Lehigh is White Haven, 24 miles above Mauch Chunk and 94 above Point Pleasant. It has a population of about 1,500, scattered, and at a short distance from the river, without a public water supply, so that but little pollution of the river from sewage results. There is no manufacturing except of lumber.

Above White Haven the watershed is almost wholly without population, or inducement thereto, the country being worthless for agriculture, with no mineral resources and but little valuable water power. The sources are in great swamps, from which the water acquires a brownish tinge, but the taste at the time of my visit to White Haven in September, was not unpleasant.

As has been seen, almost the whole area east of the Lehigh, above the Blue Ridge, is finely adapted for water supply, while the tributaries from the west are unfitted by the coal mining industry until White Haven is reached. It is, therefore, proposed to intercept these streams from the east by the conduit which would tap the Lehigh above White Haven. The watershed thus utilized has an area of about 542 square miles, and a population of about 10,000, or less than 19 to the square mile.

Returning to the Delaware, the first pollution of note above Easton is from Martin's creek, entering from Pennsylvania, 33 miles above Point Pleasant. With the exception of a small tannery near the mouth, no source of pollution was discovered on this stream below Bangor, seven miles from the Delaware and 40 above Point Pleasant. Quite a town (population 2,500) has been built up at this point within a few years by the slate quarrying industry. There are, however, no large manufactories having foul drainage, and in the absence of a public water supply, but little domestic sewage reaches the creek directly. The principal hotel has complete drainage to the stream, and about a dozen houses have privies near the banks, half of which also cast in garbage.

Another slate quarrying town, situated on a branch of Martin's creek, about eight miles from the Delaware, is Pen Argyle, having a population of about 800. Both these last named towns are connected by rail with the Delaware and Lackawanna railroad at Portland, and an extension has lately been constructed down the creek to connect with the Belvidere Division of the Pennsylvania railroad, which will doubtless somewhat increase the population in this valley.

The first town above Easton is Belvidere, N. J., forty miles above Point Pleasant, at the mouth of Pequest river. It is the seat of Warren county, a railroad junction and trading town, with some manufacturing, especially of flour, having a population of about 1,750. A public water works, pumping from the Delaware, supplies nearly 100,000 gallons per day on the average.

One public sewer drains the railroad station water-closets, one hotel and several private houses, while several grist and saw mills have privies over the stream. Water-closet drainage is thus afforded for perhaps 150 people. The dwellings are generally scattered so that comparatively little domestic sewage reaches the river directly. An old tannery on the Pequest was not in operation at the time of my inspection. A paper mill factory was also idle.

The Pequest valley is a limestone district, and contains extensive swamps about twelve miles back of Belvidere. These are being reclaimed by drainage, reducing the summer flow of this tributary.

Paulin's kill, draining a large area in New Jersey, enters about forty-nine miles above Point Pleasant. Newton, a town of about 2,000 inhabitants, is in its watershed, near its source, about thirty-five miles from its mouth, and several other quite large villages, nearly as far up, but they were not visited on account of their distance from the Delaware. There are no large villages in the Paulin's kill valley within twenty-five miles of its mouth.

Just above this, on the Pennsylvania side of the Delaware, is Portland, a village of 800 inhabitants, not very favorably situated for surface drainage. About a dozen houses have privies near the banks of

the river or creek. A small tannery was not in operation, but was said to use about fifty hides per week when running. There are also several small mills and a small foundry. This completes all notable pollution below the Water Gap.

Above the Blue Ridge, the Delaware watershed is remarkably free from pollution by manufacturing and domestic sewage. For more than forty miles above the Water Gap it is almost wholly free from pollution incident to habitation (excepting a few large summer hotels about the Gap, and the drainage area of a tributary entering two miles above, which contains the borough of Stroudsburg and considerable good farming country)—nearly the whole area being exceedingly rough and unattractive to any industry, seemingly destined to forever remain very sparsely populated. One township (Porter, Pike county) having an area of over sixty miles, had a population of less than 100 in 1880.

At the Water Gap, at Stroudsburg, and at several other points on or near the river, are many hotels and boarding-houses which largely increase the population in the summer. Some of these drain directly into the river, as noted in detail below.

The Water Gap House, having accommodation for 300 guests, is generally full, or nearly so, for two months, and half full for four month more. It has a drain to the river taking all sewage except water-closet waste, which is retained in a tight vault and used for a fertilizer.

The Kittatinny House, having about the same accommodations and patronage, has direct drainage for all sewage to the river; also the Central House, having about thirty occupants for four or five months.

A pulp and paper mill on Analomink creek, one-fourth mile from the Delaware, one mile above Water Gap Station, was being rebuilt at the time of my inspection. It was intended to consume twelve cords of wood per day, requiring probably about 7,000 lbs. of lime, 4,000 lbs. of soda ash and 1,400 lbs. of chloride of lime.

Stroudsburg, situated on McMichael's creek, just above its junction with Brodhead's creek, about four miles from the Delaware and six above the gap, is a town of about 2,000 population, largely increased in summer by city boarders.

Pocono creek, a branch of McMichael's, borders the town on a third side, so that good natural drainage facilities are afforded, but the houses are scattered over flat ground at a distance from the streams, and only one house—the principal hotel, having about fifty boarders in summer—has a sewer.

A public water supply probably furnishes not more than a fourth of the population. as there are only seventy-five taps. The quantity consumed was not known.

At East Stroudsburg, on the other side of Brodhead's creek, is a tan-

nery treating 510 hides per week, with 100 tons of bark and 40 bushels of lime. Another, in Stroudsburg village, tans 300 hides per week, and one at Spragueville, six miles above, tans 250 per week. Formerly there were more tanneries in this upper Delaware country, but now nearly all are abandoned, or about to be, except those most favorably situated for shipment.

A woolen mill at Stroudsburg scours about 1,000 pounds of wool per day, with thirteen pounds of potash, thirteen pounds of soda ash and thirty-three pounds of sal soda, and colors 600 to 700 pounds per day, mostly with logwood and catechu. One hundred operatives use privies over the stream.

Excluding the pollution above mentioned, in Stroudsburg and vicinity, there remains an excellent watershed of about 440 square miles, with a population of only 11,000, drained by Brodhead's, McMichael's, Cherry, Marshall's and Bushkill creeks, entering the Delaware within a distance of fourteen miles.

At Dingman's Ferry, about 27 miles above the Water Gap, are a few summer boarding-houses, but apparently little sewage reaches the river from them. The first town above Stroudsburg is Milford. It is the seat of Pike county, Pa., about 35 miles above the Water Gap, having a population of 1,200, mostly scattered and at a distance from the river, so that very little house drainage reaches it. It has no manufactories having foul drainage.

Port Jervis, N. Y., is the largest town in the Delaware valley above Easton. It is about 43 miles above the Water Gap, by way of the river. It was built up chiefly by the Erie railroad, when it had its terminus there, connecting with the Delaware and Hudson canal, and is still largely dependent on transportation interests, though also a trading town for the surrounding country. It has a population of about 9,000, mostly in scattered houses, on flat ground, at a distance from the river, and therefore not well drained. Only the business portion has good drainage, having a raceway in the rear of the principal street, with two connecting sewers, draining about fifty buildings. Perhaps fifty more have privies over or beside it, and 300 men in the Erie railroad shops use privies over it, making, perhaps, 800 who have water-closet drainage to the river. The town has a public water supply from a mountain stream, with reservoir capacity of 280,000,000 gallons, 130 feet above the town. The quantity consumed is not known, but probably nearly all the inhabitants are supplied, as there are 2,500 attachments. Public gas works, producing 20,000 cubic feet per day from naphtha, drain into the river, but no other manufactory pollution was discovered.

Matamoras, a suburb on the Pennsylvania side, has a scattered population of about 1,000, on flat ground, without water supply or good natural drainage.

Above Port Jervis there is little pollution from towns or manufactories, except from Honesdale and vicinity, on the Lackawaxen, the principal tributary from the west above the Lehigh. Extending for more than half the distance from the Delaware to the Lackawaxen coal fields, it has naturally been one of the principal transportation routes. The Delaware and Hudson canal follows the Lackawaxen from Honesdale to the Delaware, as also a branch of the Erie railroad. Coal is brought over to the canal from Carbonsdale to Honesdale, and formerly from Scranton to Hawley (nine miles below Honesdale) by rail. Thus towns have grown up at these points, Honesdale being the older and larger as the headquarters of the canal company. Formerly, before the railroad outlet was constructed, and no coal could be removed in winter, it was the largest coal-storing station in the world. It is about 24 miles from the Delaware, and 91 above the Water Gap. The population of the borough proper is about 2,600, but including the outskirts and villages in the vicinity, the total is about 6,000, increasing very slightly, if at all. One-half of the borough (or a population of about 1,300), has complete drainage by sewers to the stream, and a large part of the remainder has good surface drainage, while some 20 houses have privies on the banks of the river.

Hawley, nine miles below, has a very scattered population of nearly 2,000, or, with immediate surroundings, nearly 3,000. Very little domestic sewage enters the stream from this town, but a large silk mill (500-600 operatives), has privy drainage to the Paupack, a tributary of the Lackawaxen at that point. There are large glass works here, also at Honesdale and at White Mills, between the two, but otherwise there is little manufacturing in the Lackawaxen valley. A few tanneries remain, but these are being gradually abandoned. The whole watershed of this tributary is finely adapted to water supply, except for the pollution above noted.

Above the Lackawaxen the Delaware watershed is almost entirely free of towns or manufactories having any considerable foul drainage. The largest town, Deposit (1,500), is nearly 130 miles above the Water Gap, and has no manufactories or direct drainage. Nearly all that portion of the watershed in New York State is sparsely-settled farming country. The valley above Deposit was not surveyed, but extensive inquiries revealed no sources of pollution.

Appended is a list of towns and villages having a population of 200 or over, in the several watersheds, arranged in order of distance from the nearest proposed point of taking the supply. Possibly a few remote villages in New Jersey, and some mining villages near the Susquehanna watershed, north-west of Mauch Chunk, having a population slightly in excess of 200, may be wanting.

Respectfully,

DANA C. BARBER,  
*Assistant Engineer.*

*Towns and Villages in the Delaware Valley (Excluding the Lehigh) between Point Pleasant and Water Gap, having a Population of 200 or more.*

	Estimated population, 1885.	Miles above Point Pleasant.
Frenchtown, N. J.,.....	1,000	7
Milford, N. J.,.....	800?	11
Krieglesville, Pa.,.....	340	18
Bloomsbury, N. J.,.....	600	23
Phillipsburg, N. J.,.....	7,600	25
*Easton, Pa.,.....	9,750*	28
Stewartville, N. J.,.....	550	28
Broadway, N. J.,.....	200	31
†Nazareth, Pa.,.....	340†	34
Washington, N. J.,.....	2,300	35
Belvidere, N. J.,.....	1,750	40
Bangor, Pa.,.....	2,300	40
Pen Argyle, Pa.,.....	800	41
Hackettstown, N. J.,.....	2,650	45
Portland, Pa.,.....	800	48
Oxford Furnace, N. J.,.....	2,800	49
Hope, N. J.,.....	250	49
Williamsburg, N. J.,.....	340	51
Stanhope, N. J.,.....	700	55
Andover, N. J.,.....	400	66
Newton, N. J.,.....	2,000	84

*Towns and Villages in the Lehigh Valley having a Population of 200 or more.*

	Estimated population, 1885.	Miles above Point Pleasant.
‡Easton, Pa.,.....	3,250‡	25
South Easton, Pa.,.....	5,000	28
Glendon, Pa.,.....	1,100	28
Bedington, Pa.,.....	370	31
Freemansburg, Pa.,.....	630	34
Bethlehem, Pa.,.....	5,800	36
South Bethlehem, Pa.,.....	5,500	36
West Bethlehem, Pa.,.....	2,000	37
Heilertown, Pa.,.....	700	38
Allentown, Pa.,.....	20,000	41
East Allentown, Pa.,.....	530	41
Catasauqua, Pa.,.....	3,500	44
West Catasauqua, Pa.,.....	560	44
Fullertown, Pa.,.....	500	45

\* Three-fourths only; one-fourth of population drains into Lehigh.

† One-third only; two-thirds in Lehigh.

‡ One-fourth only; three-fourths of population drains into the Delaware direct.

*Towns and Villages in the Lehigh Valley—Continued.*

	Estimated popula- tion, 1885.	Miles above Point Pleasant.
Coplay, Pa.,.....	800	46
Bath, Pa.,.....	700	46
Stemton, Pa.,.....	280	46
Siegfried's Bridge, Pa.,.....	240	47
Chapman, Pa.,.....	380	48
Coopersburg, Pa.,.....	400	48
*Nazareth, Pa.,.....	680*	49
Ironton, Pa.,.....	240	50
East Texas, Pa.,.....	240	52
Centerville, Pa.,.....	350	52
Macungie, Pa.,.....	700	52
Emaus,.....	900	53
Alburtis,.....	500	54
Slatington,.....	2,000	56
Trexlerstown, Pa.,.....	390	57
Franklin, Pa.,.....	220	58?
Fogelsville, Pa.,.....	390	60
Slatodale, Pa.,.....	350	61
Parryville, Pa.,.....	700	66
Weissport, Pa.,.....	500	67
Lehighton, Pa.,.....	2,200	68
Mauch Chunk, Pa.,.....	3,800	71
East Mauch Chunk, Pa.,.....	1,900	72
Nesquehoning, Pa.,.....	1,000	76
Weatherly, Pa.,.....	2,200	82
Beaver Meadow,.....	500	85
Laurytown,.....	550	87?
Beaver Meadow Mines,.....	900	87?
Jeanville,.....	500	88
Buck Mountain,.....	700	89
†Hazelton,.....	5,000†	90
Lehigh Tannery, Pa.,.....	300	91
Sandy Valley, Pa., ?	400	93?
White Haven, Pa.,.....	1,500	94
Middleburg, Pa.,.....	300?	95
Port Jenkins, Pa.,.....	300?	96
Highland, Pa.,.....	600	99

*Upper Lehigh.*

	Estimated population, 1885.	Miles above Point Pleasant.
Gouldsboro', Pa.,.....	250	13
Tobyhanna, Pa.,.....	600	25

\* Two-thirds only ; one-third in Delaware.

† A part only ; remainder in Susquehanna watershed ; estimate doubtful.

*Towns and villages in the Delaware Valley above Water Gap having a population of 200 or more.*

	Estimated population, 1885.	Distance in miles above Water Gap.
Water Gap, Pa.,.....	200	2
Stroudsburg, Pa.,.....	1,860	5
East Stroudsburg, Pa., ..	1,200	5
Dutchbury, Pa.,.....	200	57
Tannersville, Pa.,.....	330	15
Mountain Home, Pa.,.....	280	20
Milford, Pa.,.....	1,050	38
Port Jervis, N. Y.,.....	9,200	45
Matamoras, Pa.,.....	1,000	45
Wurtsboro, N. Y.,.....	500	57
Monticello, N. Y.,.....	950	57
Narrowsburg, N. Y.,.....	320	74
Liberty, N. Y.,.....	500	76
Hawley, Pa.,.....	2,000	83
Calicoon Depot, N. Y.,.....	320	87
Honesdale, Pa.,.....	2,600	95
Prompton, Pa.,.....	320	98
Waymart, Pa.,.....	500	103
Deposit, N. Y.,.....	1,500	121
Walton, N. Y.,.....	1,500	153
Andes, N. Y.,.....	500	159
Margaretville,.....	450	162
Delhi,.....	1,450	168
Bloomville,.....	250	175
Hobart,.....	400	182

#### SEWAGE FARM OF THE NORRISTOWN INSANE ASYLUM.

In 1884 the trustees of the Norristown insane asylum constructed a small sewage farm, according to designs of Colonel George E. Waring, Jr., to correct a very objectionable pollution of Stony creek, which was receiving all the sewage and becoming very offensive in its course through the town. By resolution of the Board, this committee was instructed to visit the farm at certain intervals and to report its condition. The farm is described and the works illustrated in the report of the State Board of Charities for 1884. Visits were made in the winter, spring, summer and fall, to observe the effect of the sewage disposal at different seasons.

The winter day was very cold and the ground was covered with snow and ice. The sewage in the large flush tank was not frozen and the odor from it was not strong. It discharged about twice a day. On the fields the sewage ran into the carriers and was spread over the ground by broad irrigation under the snow and a thin crust of ice. The sewage was completely taken up by the ground. The effluent water issuing from the main drain was, however, not good. It had a decided odor of sewage and the drain pipe had a thick, slimy coat of mycelium, similar to the coating in a sewer. The attendant stated that the above had been the usual conditions. The second visit was



on a warm spring day when vegetation was about to start up. The odor from the large flush tank was but slight. The sewage was being turned into the furrows of the filter beds and seemed to be soaking away quite rapidly. The effluent from the drain pipe was no better than in the winter. It had still a strong odor of sewage and was slightly turbid as compared with the clear water of the brook into which it discharged. The attendant stated that the effluent was better when the sewage was turned upon the meadows than upon the filter beds. A third visit was made in the summer when the grounds were all under cultivation. The odor from the flush tank was still slight, but that from the carrying ditches, which distributed the sewage over the fields, was quite strong. The grass and weeds growing in them and along their borders, caused the retention of much floating and suspended matter, which soon decomposed and became foul. The custom on the best farms of distributing the sewage in earthenware channels, made of split vitrified pipe, readily obviates this trouble, because such channels are smooth and regular and readily prevent deposit, or can, if necessary, easily be swept clean at any time. The effluent water during this summer visit was much better, the odor was slight and there was no discoloration. The beneficial effect of vegetation was apparent. The last visit was made at the end of September. The sewage was being turned both upon the meadows and upon the filtering beds. The crops were in a fair condition. The attendant complained that he was not given time enough to get from the farm the very best results. The effluent water issuing from the drain was fairly good. It still had a slight odor but was better than at any previous visit. The water runs through the ground too rapidly and this is no doubt the reason why the purification is not more complete. The drain begins to discharge heavily about two hours after the flushing tank starts to siphon. The effluent continues to flow strongly from five to six hours and then practically ceases until the next discharge of the tank. The flushing tank requires about three hours to discharge, which occurs at intervals of from twelve to twenty-four hours.

It is evident that the improvement in the sewage disposal of the asylum is considerable. The liquids are, to say at the least, thoroughly strained of most of their obnoxious matter which is carried in suspension, and the effluent entering the stream is in a good condition to be purified by it through dilution and oxidation. If the soil of the farm were less stony and less porous, no doubt a much better effluent would have been obtained. It is probable, moreover, that the gradual compacting of the ground may improve it during subsequent years.

Occasion offered this year to visit a sewage farm of about eight acres in Rhode Island, upon which the refuse water from the State institutions, poor-houses, etc., is disposed of. The design was made by

Mr. Samuel A. Gray, city engineer of Providence. Besides the Norristown farm and the one at Pullman, Illinois, it is the only one of any magnitude in this country. It is described in the reports of the Rhode Island Board of Charities, etc., of 1884 and 1885, but has been considerably enlarged during the present year. Unfortunately its care was in the hands of a patient in the insane department, and as might be expected, the crops were not as good as they should have been. The details of construction are, however, of excellent design and execution and superior to those of either of the other mentioned farms. The effluent water issuing from the drain was entirely without odor or taste. A portion of the land will be operated on the broad irrigation plan but most of it is designed for filtration. The land for the former has a slight inclination, but that for the latter is perfectly level and prepared on the ridge and furrow plan.

#### TANNERY POLLUTION OF TOWANDA CREEK.

The committee beg leave to state that they have examined the report made by the Inspector of the Board, Dr. E. D. Payne, on the complaint of a nuisance caused by discharging vat liquor into Towanda creek. They find that about 5,000 gallons of tannery waste water are daily discharged into the creek, consisting of the refuse from the soaking vats, sulphuric acid from the acid vats and bark liquor from the washing vats. The creek is often highly discolored by the solution, rendering it unfit for bathing and washing purposes. Wells situated near the stream are said to fluctuate in accordance with its rise and fall and to have delivered water with a putrid odor. Hides from diseased animals have been brought to the works and are supposed to have produced malignant pustules on persons handling them. Nearly all the fish in the creek are reported as having been killed for a distance of nearly two miles. Stock watered from the creek have been affected with colic.

The waste water from tanneries is a highly offensive compound, the only ingredients which are not harmful, but rather helpful as disinfectants, are the bark liquor and salts of iron. If hides from diseased animals are treated the water must often become highly dangerous to health if used for drinking. To prevent the direct discharge of the tannery waste liquor into a running stream means to demand its prior disinfection or purification. The latter could be accomplished by means of intermittent filtration through sandy or loamy soil, in the following manner. Two or more filtering beds are prepared for alternate use, each having an area of at least one-tenth of an acre for every five thousand gallons of liquid discharged daily. They must be perfectly level and surrounded with a ridge to form a basin holding the liquid. Unless the ground is coarse gravel, tile drains should be laid five to six feet deep and about twenty to twenty-five feet apart to

carry off the filtered water. The liquid could be turned upon one of these beds for a day or two at a time and then upon the other, while the first one allows the water to filter away and the soil to be thoroughly aerated. Before a new discharge is run into the basin its surface should be loosened with a rake. To secure still greater purification and less liability of filling up the pores of the filtration grounds, a previous precipitation with milk of lime in special tanks would be found useful. A purification such as the one described is the least expensive method at present known. But, as is readily seen, it must be rather costly for a small establishment and its use is only justifiable when the interests affected are sufficiently great to demand it.

The only alternative is that the stream be no longer used for washing purposes and for the watering of stock, and that the wells near the stream be abandoned and new ones dug at least one hundred and fifty feet away to supply the water for house and stable use. These changes would cost much less in the aggregate than the complete purification of the tannery sewage.

Respectfully submitted,

RUDOLPH HERING,  
*Chairman.*

#### V.—REPORT OF COMMITTEE ON PUBLIC INSTITUTIONS AND SCHOOL HYGIENE

The Committee on Public Institutions, &c., to whom was referred the paper of Doctor R. Lowry Sibbitt on alms house construction, respectfully report that they have found many useful suggestions in the paper, and as embodying the minimum of requirements in this construction of such county buildings, would recommend it for publication in the proceedings of the Board.

Respectfully,

J. H. McCLELLAND, M. D., *Chairman.*

TO BENJAMIN LEE, M. D.,

*Secretary of the Board of Health of Pennsylvania:*

DEAR SIR: In compliance with your request, I present the following for the consideration of your board. The accompanying draughts represent a small building, with sufficient capacity however to accommodate one hundred and thirty inmates. There are five rooms on the second and third stories for the steward and his family, three for library, chapel and drug room, all communicating with rolling doors, and forty-four for the inmates. By extending the building in each direction from the center thirty-feet, and thus making it two hundred and ten feet long, one hundred more persons could be accommodated with a slight enlargement of the dining rooms, kitchen, and steam generating apparatus. In those counties which have a much larger



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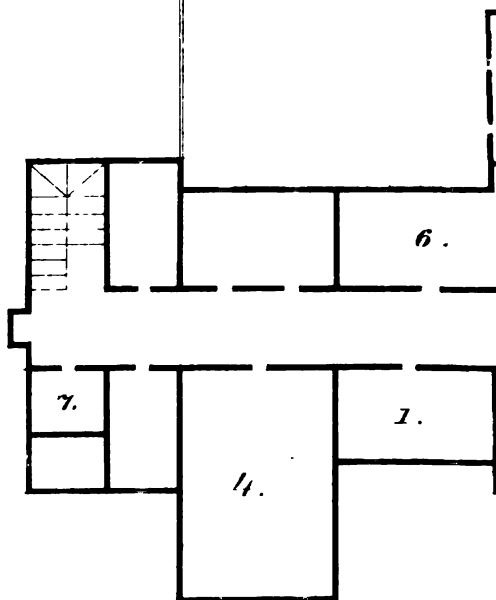


*Building for  
Insane Poor.*

1,1,1,1,1, Sten  
2, 3, Kitch  
4, Boil  
5,5,6,6, Pant  
7,7, Bath

*Recreation Grounds for Males.*

N O R T H .



F I R

*Hog Pen*

*Barn .*

*cellars.*

*kitchen house .*

*sal room .*

*dining halls.*

*8. Water closets.*

*Recreation Grounds for Females*

SOUTH.

LOOK.





number of paupers to provide for, wings might be added; or what would still be better, a separate building, for the accommodation of those who are able to go to their meals every day, might be erected. I will limit myself to the important features of a county alms-house, whether a small, medium-sized, or large one.

1. *Location.*—A county alms house should be located a mile and a half, or two miles from town. There should be no temptation presented to the inmates to stray away, either for the purpose of begging, or of sight-seeing; at the same time its location should not be so distant from town as to be inconvenient for the steward to ship coal or other products to the premises, or for the attending physician to make daily or semi-weekly visits. A malarious district should be avoided of course, and the surroundings should be cheerful. Another important matter is a spring of water in the neighborhood issuing from a point sufficiently elevated to throw the water into the third story.

2. *Situation.*—The buildings should be placed on ground well located for drainage, but in no case upon a hill, where the lame, the blind and aged could not conveniently take exercise, or the farmer reach the buildings easily with wagon or cart. They should be situated at least one hundred yards from a public road and they should be all on one side of it.

3. *Position of the main building.*—The main building should, in all cases, face the east and the west, so that the sun may shine upon both sides of it every day of the year. This is a most important matter, in a sanitary point of view, especially in the case of large buildings, in which persons are required to live for months, or even years, and is very often overlooked. Sunlight is necessary for health, and that side of a large building upon which the sun never shines must always be damp and unhealthful.

4. A county almshouse should never be more than three stories high, and these should not be higher than nine or ten feet each. The lame, the blind and the aged should not be required to ascend and descend long flights of stairs. The comfort of the poor should not be sacrificed for the sake of architectural beauty. The classes of persons for which almshouses are erected are slow enough to take exercise in the open air, without making the effort painful to them. These stories include the basement, the greater part of which should be above ground. It should not be used as a dormitory, except for the transient poor who may be seeking a night's lodging.

5. There should be three stairways in every almshouse. One should be for the exclusive use of the steward and his family, the others should be at the ends of the building—one for the male and the other for the female inmates. The corridors should run the entire length of the building, and in each there should be a low, shut-off partition, so as to secure the separation of the sexes; but a door should

be made in each partition, so that they may be brought together in the chapel for religious and other exercises, and in case of fire in one end of the building, they may escape at the other. The separation of the sexes is a necessity in all such institutions if the people of the county would maintain a good reputation for themselves and their almshouse. Much of the disgrace and shame connected with the county jails and almshouses of Pennsylvania are due to the commingling of the sexes. At the same time this separation of the sexes in the building implies a provision for separate physical exercise and recreation. These should be two plots of ground not less than an acre each, given exclusively for these purpose, and they should be connected with the ends of the building. They should be ornamented with trees and plain native shrubbery, such as lilacs and roses. Iron or wooden benches should be placed in them, upon which inmates may rest themselves. Separate dining rooms should also be provided in the basement story, and for the convenience of those who are unable to leave their rooms, dumb waiters may ascend to the second and third corridors from the pantries.

6. *Annexes and out-buildings.*—The kitchen should be a one-story building on a level with the basement story, so that the fumes from it may not be carried through the main building. It should be near the pantries and dining rooms. The engine house in which steam is generated should also be a one-story building, so that in case of an explosion the main building would not be endangered. It should be on the west side whilst the kitchen should be on the east. The bake-oven, out-door closets and hog-pen should also be on the east side, as the atmosphere in Pennsylvania generally moves in an eastward direction. The barn should be, at least, one hundred yards from the main buildings, and the garden may be one of the fields of the farm.

7. The basement story of the building should be made of hewn stone, and the basement floor should be well macadamized and cemented, so that rats could never perforate either the walls or the floor. This macadamized and cemented floor should be, at least, six inches thick, with iron joists and corrugated sheet-iron placed between them; this story might be considered fire-proof. Tiling might take the place of the sheet-iron, but the ceiling would then require plastering. The other stories might also be made fire-proof, but such floors cost about double that of ordinary wooden floors and plastered ceilings. The roof should be of slate, tiles or zinc composition.

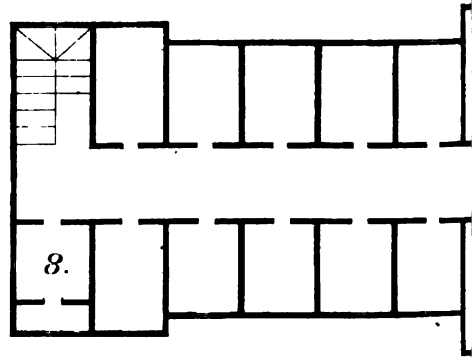
8. *Ventilation.*—Transoms should be above every door, and the sash of the windows should be hung upon pulleys.

9. The water supply should be continuous. A spring at some elevated point is to be preferred. The hydraulic ram comes next in order of preference if the spring is not on a level with the top of the



*1, 2, 3, Stewards*  
*5, 6, 7, Drug Room*  
*rolling c*  
*8, 8, Bath-Room*

N O R T H .

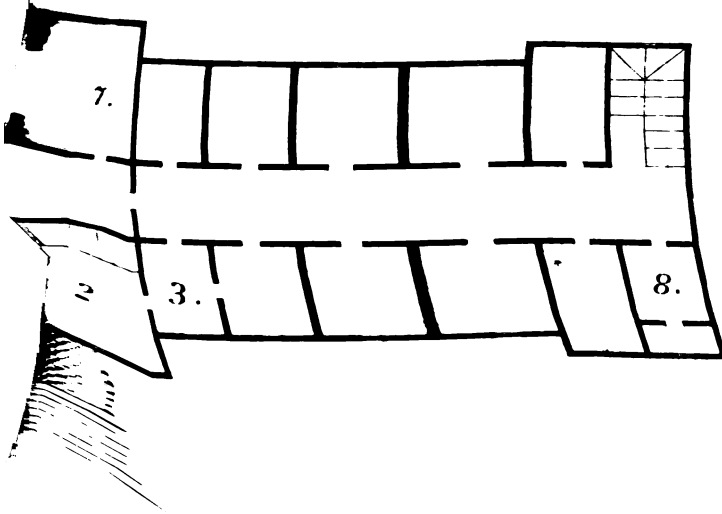


S E C O

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Water Closets.



SOUTH.

FLOOR.

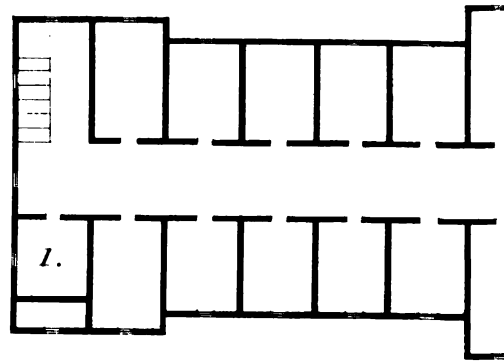






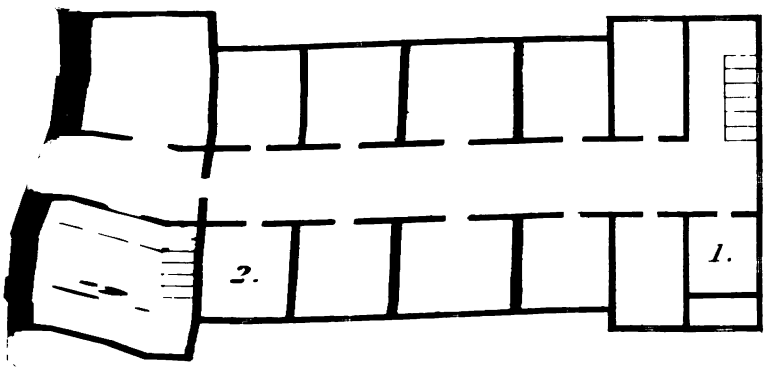
1, 1, Bath Room  
 2, 2, Steward

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T H I R D

Water Closets.  
 Apartments.



SOUTH.

LOOK -



building. In this case tanks are necessary, and these should be placed above the water-closets and bath-rooms. A windmill cannot always be relied upon to raise water from a well. When spring and well water is hard, it may be softened by turning the rain water from the roof into the tanks. Of course, the water should be free from decaying vegetable and animal matter.

10. *Drainage*.—In a sanitary point of view this is a most important consideration. To prevent accumulations in the waste pipes the output should be at least ten feet below the basement floor. The horizontal pipes should have a considerable incline, and the traps should be kept in good repair. An abundance of water should be kept constantly on hand, and all the stop-cocks should be opened at least twelve hours a week, so as to wash out the pipes. The rain pipes should not open into any of the pipes bearing the contents of the water-closets unless the traps are in good condition.

11. The law of the State requires fire-escapes to be attached to all almshouses, and the best place for them is at the ends of the building in direct communication with the corridors; but the best fire-escapes for the lame, the blind and the aged, who constitute the greater part of the inmates of such institutions, are the flights of stairs at the ends of the building.

12. *The Insane Poor*.—This unfortunate class of our population is much more to be pitied than any other, and, instead of confining them to the fourth story of an almshouse, a separate building should be erected for them. They are unlike others in this respect that they are generally able-bodied, and, therefore, should have plenty of exercise, sun light and fresh air. The conditions for partial or complete recovery should not be denied to them. The percentage of the insane poor which are now required to be kept in our almshouses does not exceed ten of the whole number; and therefore the building for their accommodation need not be large. A substantial cottage is all that is required, with a basement story merely for ventilation. A substantial partition should separate the sexes. The most important feature of this department of a county almshouse consist in the means for exercise and recreation. There should be at least a half acre of ground given to each of the sexes for these purposes, and if trees cannot be planted on account of suicidal tendencies, there should at least be shrubbery and flowers. This building can easily be heated by the same boiler as the large one, and their food can be carried to them, so that a separate kitchen and pantry are not needed. Their meals can be given to them in the halls adjoining their rooms.

Very respectfully,

R. LOWRY SIBBET.

CARLISLE, PA., October 25, 1886.

**VI.—REPORT OF THE COMMITTEE ON ADULTERATIONS, POISONS, EXPLOSIVES AND OTHER SOURCES OF DANGER TO LIFE AND LIMB.**

The committee respectfully report that during the year there has been little work done in this department, because of the fact that it seems to the committee expedient to employ the very limited amount of money at the Board's disposal, in other lines of sanitary work. The methods necessarily resorted to in investigating adulterations of food, medicines, &c., require the employment of experts, and involve the expenditure of money at every step, and no such investigations can be of much public value unless they be made both systematic and extensive. Still your committee has been ready at any time to undertake any investigation of the kind, that might seem to be especially demanded, and to act upon any complaint brought to the Board's attention.

There can be no question, however, that the department of sanitary labor assigned to this committee is one of the most important that engages the attention of sanitary authorities. The adulterations of food and of drugs are so numerous, so common, so universal, we might almost say—and at the same time so prejudicial to the health of our people, that constant watchfulness and omnipresent oversight alone can repress and prevent them. The act creating this Board undoubtedly contemplates and demands for our people, all the protection that an energetic, yet judicious exercise of their especial function can secure to them.

The lines of useful and necessary work that present themselves to the consideration of this committee, are numerous. Wherever competition prevails, there we find the temptation to lower the standard of purity and strength of our food-stuffs and our medicinal preparations, and with the exception of the few that are protected by patents, this competition affects them all. Your committee's field of labor in these two sub-departments alone, must therefore be a very wide one.

Again in the manufacture of certain goods employed in our households, wall papers, textile fabrics, dye-stuffs, &c., we shall find abundant scope for the operation of the Board's conserving energies, not to speak of certain special articles of traffic and use that, by reason of imperfect methods of manufacturers, imperil the safety of our citizens.

Certain of our other State Boards of Health, notably that of Massachusetts, have obtained most excellent results from a comparative examination of the purity and strength of our standard and most extensively used drugs, opium, quinine, &c., &c. And the Massachusetts Board has found no difficulty in securing the very cordial coöperation of the drug-trade itself, in its laudable work of improving the char-

acter of our medicinal preparations. The same careful and discreet methods can be applied doubtless, with equally good results in the improvement of our food preparations.

The amount of labor needed to make this branch of our service very valuable will require the employment of one or more expert chemists, and the expenditure of a large sum of money. The conviction has forced itself upon your committee, that our duty under the law creating the State Board of Health, requires that this urgent sanitary need should be laid before the legislative authorities, in order that the advisability of setting apart a special and specific fund for this work might be duly considered and acted upon at this next session.

Respectfully submitted.

PEMBERTON DUDLEY,  
*Chairman of the committee.*

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#### VII.—REPORT OF COMMITTEE ON SANITARY LEGISLATION, RULES AND REGULATIONS.

The Committee on Sanitary Legislation, Rules and Regulations begs leave respectfully to report, that it is now engaged, with the assistance of a competent legal adviser, in preparing a comprehensive compendium of the laws of the State bearing in any way upon the public health, and that it proposes to introduce a bill before the next Legislature asking for authority to print a separate edition of the same as well as to incorporate it in the forthcoming annual report. It has formulated regulations in regard to the removal and abatement of nuisances, and in regard to the proper management of slaughter houses, bone-boiling establishment, etc.; a form of permit for slaughter houses, etc.; a model sanitary ordinance for cities and boroughs; model rules for local boards of health, and blank forms for appointment of inspectors, and instructions to inspectors, which it offers for the approval of the board.

Respectfully submitted.

DAVID ENGELMAN, *Chairman.*

## APPENDIX B.

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### REPORTS ON THE SANITARY CONDITION OF CITIES AND TOWNS.

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1. Report on the water supply and drainage of Towanda—Benjamin Lee, M. D., Secretary.
2. Report on the water supply of Altoona—Charles B. Dudley, M. D., Inspector.
3. Report on the water supply of Bethlehem—William B. Atkinson, M. D., Medical Inspector.
4. Report on Drowned Lands in Exeter and Wyoming boroughs, Luzerne Co.—David Engelman, M. D., Member of State Board of Health.
5. Report on the water supply of Allentown—Wm. B. Atkinson, M. D., Medical Inspector.
6. Report on the sanitary condition of Bristol by Wm. B. Atkinson, M. D., Medical Inspector.
7. Report on the sanitary condition of Blairsville by Dr. S. R. Rutledge.
8. Report on the sanitary condition of Altoona and Johnstown by Edward Wm. Germer, M. D., President of the Board.

#### I. REPORT OF AN INSPECTION OF THE WATER SUPPLY AND DRAINAGE OF TOWANDA, BRADFORD COUNTY.

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By BENJAMIN LEE, A. M., M. D., *Secretary.*

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The Secretary begs leave respectfully to report that at the request of the borough council of Towanda, Bradford county, on the sixth day of June last, he inspected the source of the water supply of that borough, in company with Dr. E. D. Payne, Medical Inspector to the Board, Dr. T. B. Johnson, and Dr. S. M. Woodburn, citizens of that town.

The dam of the Towanda Water Works Company is situated in a wooded ravine about two and a half miles from the town. This ravine receives the surface wash of a water shed of about twelve hundred acres of farm land, generally under a high state of cultivation, with three small areas of wood-land. The surface of the dam is about two hundred and eighty feet above the level of Main street, Towanda. This land is parcelled out among fifteen different owners, thirteen of whom have farm buildings, barns, pig sties, and so on, upon their properties, and own, among them, a considerable number of cattle. The rivulet which supplies the dam, forks a short distance above it, one branch running nearly due north, and the other west of north. We

struck the north branch at a point where it crosses the road, about a mile from the dam. At this point there was a mere dribble of water in it, but the indications at the side of the road were very plain that it was at times a watering place for cattle. We followed it down from this point to the dam. The bed was rocky and nearly dry although there had been a very heavy rainfall the night but one before. During the entire distance there were frequent deposits of cow dung on the banks and in the bed of the stream, some of them quite fresh. At one house about three-quarters of a mile from the dam, the pig pen and privy were within a few rods of the stream, on a steep hill side. A gutter had been cut from the latter to conduct its overflow into the brook.

A measurement of the flow at a point a little beyond this, showed that it passed through an aperture three and a half inches broad by one and a half inches deep—nearly semi-circular in contour, at a very slow rate of speed.

A similar measurement at the mouth of the other branch before it entered this, gave a stream three inches broad by two and three-fourth inches in depth passing through a square aperture, while the combined volume of the two rivulets, just at the entrance to the dam, was represented by a cross section of a shallow oval twelve inches broad and one and a half inches in depth at its deepest point. The area of the dam itself is about twenty by fifty rods, with a depth at the dam breast of forty feet. The banks are quite steep. It is evident that the small amount of water flowing through the influent brooks will not at all account for the quantity stored in this reservoir, nor are there any evidences of springs rising from the bottom, the water being everywhere of a uniformly turbid appearance and muddy color. The only conclusion is that with every heavy rain fall, the entire wash of the agricultural basin already described finds its way immediately over the surface into the nearly empty streambeds, bringing with it the drainage of barn yards, manure heaps, and pig pens, and in one instance at least, of a far more dangerous collection of filth, and, taking up whatever deposits may have been left on the bare stones since the last storm, carries it all down together into the reservoir. The deep accumulations of mud and dead leaves at the head of the dam and along its banks give additional credibility to this supposition.

There are two modes of judging of the character of a potable water. One is that of subjecting small specimens of it to chemical analysis. Sanitarians are coming to regard the results of such tests with less confidence than formerly. Experience has demonstrated that a water which does not show up badly under Nessler's test, may still contain the germs of disease. The other plan is that pursued in this instance, of tracing the water to its source and determining what opportunities it may have had for acquiring pollution, and what are the circum-



stances which would guard it against contamination. The water-works company has published a statement that an experienced chemist has examined a specimen of this water and pronounced it pure and wholesome. Supposing, which, for reasons just stated I do not admit, that this opinion was final as regarded that particular specimen as to the condition of all the water in the reservoir at the time the specimen was taken, it does not follow that a week or a month later, the same favorable verdict would have been rendered.

Considered, on the other hand, in reference to the source from which it is derived, the verdict must be that this water is in extreme danger of pollution of the most disgusting and dangerous character, and cannot fail, sooner or later, to be a propagator of disease if its use as a drinking water be persisted in. Moreover, it must be observed that such a source of supply is extremely precarious. This fact is acknowledged by the company in the fact that it has a pumping station on the Susquehanna a short distance below the town for supply in times of drought, when the reservoir runs low. The citizens usually consider the river water preferable to that of the reservoir. They complain of the latter as often offensive to both taste and smell, dark-colored and muddy. At the time of my visit it did not present any of these objectionable features. There is a small settling and distributing reservoir within the borough limits, fenced in and properly protected. It is, however, not at a sufficient elevation to force the water into all parts of the town, and for certain streets the water must be delivered directly from the dam. For the excellent map, to which I call your attention as illustrating the foregoing description, I am indebted to Mr. Hiram E. Bull, C. E., of Towanda. From the dam I drove some eight miles out into the mountains, to visit a stream known as the Millstone creek. This is a stream of clear mountain water coming from springs and brooks, which take their rise in a region too rocky and inaccessible ever to be devoted to agricultural purposes. It was running at the time in a flow amply sufficient to supply the needs of a far larger town than Towanda, and the residents along its banks at points lower down asserted that it never became lower than it then was.

I am not prepared to say that there are not other sources of water supply as good, and more accessible, because I have not thoroughly examined the entire surrounding country, but I am quite prepared to say that it would be difficult to find a more copious or limpid stream, and that the obstacles in the way of utilizing it do not appear to me great. On the afternoon of the same day I made a tour of inspection of the streets of the town, accompanied by Medical Inspector Payne, to whom I am indebted for the following facts in regard to the drainage facilities: The soil is a heavy clay, with underlying rock, from a few to many feet deep, the town being in a series of hills gradually

rising from the river. Only in spots can underlying sand and gravel be found, from twenty to fifty feet deep, which renders the construction of cesswells partially unsafe or impossible. Open gutters are therefore generally relied upon for the disposal of common kitchen slops. These, with few exceptions, are unpaved, and are allowed to grow up with rank grass or weeds. I found many of these grass-grown gutters recently weeded and cleaned. Dr. Payne thought that the anticipated visit of an officer of the State Board of Health had not been without its effect. For drain tiles from the kitchen to the gutter glazed tile is used by many, but wooden drains are in too common use. Most house yards have a well and a privy vault on them in close proximity. From the character of the soil, the wells must be principally supplied with surface water, much of it running directly in. It will readily be seen what danger there is that in heavy rains the shallow privy vaults will be flooded, and their contents escaping will find their way over the surface into the wells. In such a condition of things the necessity for a supply of pure water from an outside source becomes only too obvious; and yet such is the distrust of that now furnished by the water company that the citizens prefer to trust to these dangerous wells rather than to risk its use. There is no general system of sewers, but many of the houses and manufactories have private soil drains running to the river. This is of course the natural and only receptacle for the drainage of the town, whether surface or underground. I found fourteen of these sewer drains discharging along the river bank.

The accompanying plan, also by Mr. Bull, indicates their position and also the peculiar disadvantage under which the town lies for the removal of this filth from their neighborhood after it has reached the river. The old dam of the navigation company, just at the lower end of the town, is broken down at the end near the opposite side of the river. The current is thus drawn principally from that side, leaving the stream sluggish on the Towanda side. In addition to this the old chute of the canal company has been solidly walled up, so that no water can pass down on that side. Hence results an eddy or pool in which the water, laden with the filth of the town, slowly circulates, giving forth stench by day and foul vapors by night. The natural relief for this evil is re-opening the old chute or blowing a hole in the dam on the town side. In addition to the expense that this procedure might entail, there is the more serious objection that it would lead to the vitiation of the water at the pumping station just below, which is now comparatively pure. The only alternative is to remove the pumping station to a point so far above the town that it will be free from all source of pollution. And this, in any event, must become necessary if the river is to be depended upon for drinking water. Whatever be done with the dam, the pollution must before long reach

that point. Probably the best course for the water company to adopt immediately, while making up its mind to the ultimate source, would be to make this change of location in the pumping works. A water would thus be furnished which the citizens might use without anxiety, although it would not have the limpid sparkle and perfect purity of the mountain stream; and the most serious objection to a greatly needed improvement in the disposal of the drainage would thus be removed. At present the danger to the health of the place from the retention of such a mass of filth upon its borders is second only to that resulting from the risk of contamination of its drinking water, both from the public works and the private drinking wells.

All of which is respectfully submitted.

BENJAMIN LEE, *Secretary.*

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## II. REPORT ON THE WATER SUPPLY OF ALTOONA.

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By CHARLES B. DUDLEY, M. D., *Inspector.*

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BENJAMIN LEE, M. D.,

*Secretary State Board of Health:*

DEAR SIR: Referring to yours of December 15, in regard to the condition of the water supply at Altoona used on cars. I find

*First.* That typhoid fever is not epidemic in Altoona, and indeed most of the physicians have not a single case. I do not think there are five cases in the whole city limits. If, as your letter seems to indicate, the water supply at Altoona taken on the cars was contaminated with typhoid fever germs, and occasioned the cases in Pittsburgh which you refer to, it would naturally follow that the people of Altoona, who use this water and nothing else, would be similarly affected. The absence of typhoid fever here seems to point strongly in the direction that the water is not contaminated.

*Second.* We are quite well aware that there is serious danger of our water supply being contaminated, from the location of privies, pig sties and stables, too near the stream, and during last summer and up to the cold weather, we, as board of health of Altoona, did everything possible to produce a change. We have promises in writing from all the parties from whom there is danger of contamination that changes will be made at once, and as soon as the milder weather begins to come on in the spring, a most thorough inspection will be made to see whether the promises have been fulfilled.

Our position here is a little peculiar. We are not quite able to decide whether, as a local board of health, our control covers the Altoona

water supply, the sources of which are more than five miles away from the city limits, and we have thought of asking help from the State Board of Health, provided the matter came to serious contest, between the Altoona Board of Health and the parties who are contaminating the stream. We have no doubt that we can call on you for help in case it should be necessary.

*Third.* We have made chemical examinations in the laboratory of the Pennsylvania Railroad Company of the Altoona water supply from time to time, but not with a special reference to disease germs and organic matter. No very recent determinations of any kind however, have been made. We are sorry to say that the quality of the water is depreciating somewhat owing to the inroads made on the sources of supply by parties taking out lumber and coal. The amount of mineral matter is increasing and the amount of organic impurity likewise.

Very truly yours,

CHAS. B. DUDLEY, *Chemist,*  
*Inspector to State Board of Health.*

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### III. REPORT ON THE WATER SUPPLY OF BETHLEHEM.

By WILLIAM B. ATKINSON, M. D., *Medical Inspector.*

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board of Health:*

DEAR SIR: In response to your instructions, I visited Bethlehem, in Northampton county, and West Bethlehem, in Lehigh county, September 7, 1886.

Mr. Hill, who operates one of the places supposed to be the source of the obnoxious odors, courteously showed me over his establishment. He places an entire carcass at a time in an iron steamer, from the top of which a pipe leads down into the Monocacy creek to carry off the escaping gases. At the point where this enters the water, he claims to have a disinfecting apparatus, the nature of which I could not understand. From one side of the steamer, an open trough leads for a number of feet to a reservoir; in this the melted lard is conveyed, and during its course gives forth that peculiar odor of burning fat which to many is so offensive. In every other way this place did not seem to offer any objectionable features.

Mr. Grube's place was really a junk shop for the reception of rags, iron, hides, bones, &c. The collection of dry bones was not offensive. It was in a closed room, from which he hauled the bones away as the

quantity became sufficient. In the room for salting hides, I found the usual method of pickling in operation, and in addition, there was a quantity of green bones; for these, I suggested the use of disinfectants and their employment when cleaning the floor at each removal of the hides, &c.

Both of these places drained more or less directly into the creek.

Having been informed that Monocacy creek was occasionally used as a source from which to obtain water for the hydrants of Bethlehem, I visited the water works. On my way to the works, I saw that a number of privy wells emptied directly into this creek. At the works, the engineer, Mr. Hoffman, explained to me the condition of the works. No water is ever pumped up from the creek. The water of this creek is used as a power to turn an undershot wheel as an aid to the engine. The spring room is but a short distance from the engine house; it is always closed, so that no access can be obtained, and thus the water is not liable to be polluted from the outside. The supply is abundant, about thirty-three gallons daily for every inhabitant of the town. Being limestone water, many of the people use cistern water for drinking. I am satisfied that this water is not injured in any way, by either of the works mentioned.

The odor of fat rendering is very strong, and greatly objected to by the people. When I again passed through Bethlehem within a few hours, it was very marked. The only way to obviate this will be to require the conveyance of the tallow by means of a closed pipe, and the use of condensers to carry the gases back to the fires, there to be consumed.

Both Mr. Hill and Mr. Grube expressed their desire to avoid any cause of complaint.

I would suggest that both these places be notified officially of the great need of the use of *deoderizers* in order to prevent ground for complaint on the part of the citizens of Bethlehem.

I next went up to Slatington, and was much pleased to find that no epidemic of any kind was prevalent there. I met Messrs. Young and Miller, and also several of the druggists and other people, from all of whom I learned that but one case of fever had occurred in the town, and that came from Allentown. The drainage was good, the streets, &c., were clean, and no ground existed for complaint as to the hygienic surroundings.

Respectfully,

WM. B. ATKINSON.

IV. NOTES OF AN INSPECTION OF OVERFLOWED LANDS IN  
BOROUGH OF EXETER AND WYOMING, LUZERNE CO., PA.

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By DAVID ENGELMAN, M. D., *Member of State Board of Health.*

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BENJAMIN LEE, M. D.,

*Secretary State Board of Health:*

DEAR SIR: In compliance with your request, on the 24th day of September, 1886, I drove around the swamp on the property of persons mentioned in complaint, and found it flooded with water containing much decaying vegetable matter, and giving off offensive odors from all parts; water green and stagnant; backing up into drains opened for draining meadow lands in its vicinity. The outlet, a creek flowing through Wyoming borough and Kingston township, flowing very sluggishly and offering a way, if utilized, of carrying off the water from the swamp into the Susquehanna river.

I there interviewed the persons named below to ascertain, first, if this was the usual condition of the swamp; second, if not, what was the usual condition of the swamp; third, the cause of the increase of water in the swamp; fourth, the best means of carrying off the water; fifth, the effect of the present condition of the swamp on the health of Exeter and Wyoming.

I then visited the Schooley shaft, situated in Exeter borough and on the border of the swamp, and found them pumping their mine refuse water directly into the swamp, without providing any channel for carrying it off, and without pumping it into any flowing stream, and (see interview with Mr. Haston, outside superintendent,) throwing into the swamp 1,300 gallons of refuse water, every minute of the twenty-four hours, pumping more at night than during the day.

Mr. Deuton D. Durland said: "I have lived in Wyoming all my life; never knew so much water in the swamp; has been so since Schooley shaft began pumping water; swamp before that was usually dry at this season of the year, now has about two feet of water over it. This water could be carried off. Malarial diseases not frequent here before 1885. A great many people sick with fever and ague here, and in Exeter borough. Think this water should be taken care of."

Mr. George F. Richmond, bookkeeper for Hutchins & Shoemaker, Wyoming terra cotta works, says: "Never had so many sick men with ague as this year; four or five off every day. Swamp never so full of foul water before; fish are dying in it. Cannot give the water in creek to our stock to drink. Cellars about our place are full of water. Have been employed here over ten years. Never knew such a state of things before."

Mr. Robert H. Hutchins, storekeeper of the same firm, confirmed above and mentioned some ten men now sick with ague among their men.

Mr. John A. Hutchins, one of the proprietors of the Wyoming terra cotta works, confirmed the above and added that orders were granted their men for prescriptions every day, and that he could not rent houses on his property near the swamp, and that their horses had been sick from using the water from the creek that drains the swamp. Swamp could be drained through creek.

Dr. E. S. Hay says: "Have practiced medicine in Wyoming since 1882, before water from Schooley shaft was pumped into this swamp, I could and have gunned over it during summer and fall months and it was dry; now there is two feet of water over it, foul, stagnant and noxious. Malarial diseases were the exception; now ague is epidemic in Exeter borough and very prevalent here. I think the flooding of this swamp causes it."

Mr. Richard Hoomby says: "Have lived in the same house near swamp, in Wyoming borough for over five years. We never had any sickness before this year. Now my son, daughter and myself are sick with ague, and have lost a great deal of time from our work on account of it. The flooding of the swamp by this mine water is the whole cause."

Mr. Hugh Chestworth, foreman at the Wyoming terra cotta works, confirms the above; says his family are sick with it. "Have always taken clay for making terra cotta pipes, etc. out of the swamp before this year; now we are drowned out."

Mr. D. O. McCollum says: "Have lived in Wyoming fifteen years 'off and on.' Never had malarial troubles before. Have been sick with ague past two weeks, also my little boy. Water from this swamp backs up on my drains in my meadows. Should be taken care of somehow."

Mr. Haston, outside superintendent at Schooley shaft, says: "We are pumping out of the mine, from two openings into the swamp 1,300 gallons of water per minute; greater part at night; pump it directly into swamp. Have no outlet. Suppose it goes out by creek through Wyoming."

Dr. C. P. Knapp says: "Have practiced medicine in Wyoming and Exeter since June 1, 1875. Malarial diseases were the exception here before 1884 and 1885. Now they are very prevalent, our summers here are usually very healthy; but during this summer of 1886, intermittent fever (many cases of a severe type) and dysentery have been nearly epidemic. I can safely say every family in the borough of Exeter either has had or now has some one ill of intermittent fever since July 1, 1886. Wyoming borough has escaped part of this trouble being situated west of the swamp you have lately seen. The prevailing

winds being west, have carried the malarial vapors away from it. Before the water from Schooley shaft was pumped into this swamp I have traveled all over it dry footed. It now is flooded with from eighteen to twenty-four inches of water which is stagnant, and this causing the luxurious vegetation on this rich land to rot is daily giving off noxious vapors. This is poisoning our atmosphere, causing intermittent fever and the train of ills from a malarial atmosphere. Hundreds are daily kept from earning their daily bread by sickness, and the working power of the family gone. Wives and children not only suffer from disease produced from this swamp but also from the ills caused by want of money to provide the necessary food and medicines to sustain life and stay disease. I have carefully considered the condition of things here for the past two years, and matters are daily growing worse. I give away to needy persons alone an average of one ounce of sulphate of quinine weekly and am fully convinced the only way is to compel the proprietor of the Schooley shaft to carry the refuse water from his mine in a suitable manner to some open water course, either the Susquehanna river, or else by making a channel to the creek, the outlet of this swamp, and giving the creek grade enough to carry off the water thoroughly and quickly. I see from twenty to forty cases of intermittent fever every week and have done so all summer. This large amount of foul and stagnant water will soon, in this gravelly soil, foul our wells, and I am sure has already, thereby causing dysentery. This will increase, and the reputation of the place being against health will cause people to keep away from here and business will also suffer. Many cases of want now exist in Exeter borough which, if husband, sons and others had been able to work would have had plenty. Doctors and medicine are of little avail when we are breathing and drinking poison."

Mr. Robert Wilson, druggist, twenty years in Wyoming: "Sale of quinine is greater than ever before. This place always considered healthy. Malarial diseases not prevalent before last year. Yes, this swamp up here is the cause I guess, but then if you drain, what am I going to do; spoil sale of quinine. They are pumping a good deal of water into it from the mines."

In all directions I find the same story, and it is self-evident that since the refuse water from the Schooley shaft (Nelson Cowan, proprietor, Pittston, Pa.) has been pumped into and upon this land, intermittent has been prevalent and has steadily increased, and is now causing sickness and want in Exeter borough and Wyoming.

Nelson Cowan should be notified to conduct this water in a proper channel of sufficient width and depth either to the Susquehanna river, or to the creek, the outlet of the swamp, and to make the creek of sufficient capacity by deepening and regulating its channel to carry off this water. The property-holders should also drain their land into



this stream, the supervisor of Exeter borough should put in needed culverts in road across swamp, and the Lehigh Valley Railroad Company, whose road runs through swamp should supply a sufficient drain for water across their roadway.

All of which is respectfully submitted.

DAVID ENGELMAN.

EASTON, PA., *September 28, 1886.*

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V. REPORT ON THE WATER SUPPLY OF ALLENTOWN.

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By WILLIAM B. ATKINSON, A. M., M. D., *Medical Inspector.*

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BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board of Health :*

In obedience to your instructions, I visited Allentown, Lehigh county, on the 4th inst. I was met by Dr. P. L. Reichard, the very active health officer of the place, the mayor, the water committee and several other officials. In company with these gentlemen, I made nearly all my investigations. Early in January, 1886, Dr. Reichard was made health officer, and in the spring, finding the sanitary condition of the town had been much neglected, he called the attention of the citizens to the fact, and urged their inspection of their out-houses, the removal of garbage accumulations, and all other matters liable to cause disease, urging them not to wait till the arrival of hot weather. About one month before the epidemic commenced, he again made a thorough inspection, and again urged the importance of cleanliness; few made any response. Garbage had been allowed to lie in the yards and open lots for several years, cesspools had not been cleansed, in short, the hygienic surroundings were in every way bad. Dr. Reichard says, "I visited the water house where the pumps are located, and found the dam covered with rank grass and weeds, that portion near the slaughter house a mass of stagnant water completely overgrown." This was at his direction carefully cleansed. There were stagnant pools in the meadow at the eastern portion of the city, and a mill race covered with slime. At this time a meeting of citizens was called, and several hundred dollars was contributed for sanitary purposes. With the aid of the sanitary police, he is now busily engaged policing the place. At the time of my visit one hundred and eight orders had been issued for cleaning cesspools. He is about to institute a system for collection of garbage.

The epidemic began early in July. Just before this, a regiment of

militia was encamped in a field close to the town in the immediate vicinity of the spring from which is derived the water supply. Shortly after, a south-east wind blew over the town for several days, coming direct from the meadows containing the slaughter houses, the dam and the field of the encampment. It is thought that this circumstance aided greatly in spreading the disease. After a very careful examination of these localities, I found a condition of affairs which was very surprising. The spring alluded to is located about half a mile from the town. The water appears clear, tastes good, and is seen bubbling up freely, keeping the well about two-thirds full. But there is the merest appearance of any effort to preserve the water from contamination. A pump used by a hotel a few feet away is placed in this well. A trap door on one side is loose, and can be opened at any time by those who desire. On examining the pool beneath, I found it covered with leaves, small twigs, a piece of paper—in short, this pool might as well be the receptacle of any filth in the neighborhood, as this trap door was its only protection. I was informed that during the encampment, the beer barrels were kept there as a refrigerator. The conduit pipe to the reservoir has a calibre of twelve inches, is 2,200 feet in length, and has a fall of eight feet. It is laid partly in the Little Lehigh river, and partly in the meadows in a marsh, into which flows the drainings from a slaughter house, pig pens, cesspools, etc. This pipe has been undisturbed for thirty years. What is its condition as to leakage from defective or worn out joints, or its own injury by settling, corrosion, etc., is easily surmised. Shortly before my visit two suction pipes believed to draw directly from the Little Lehigh were disconnected, under the belief that in this way the impure water of the dam had been mixed with that of the spring.

I requested Dr. Reichard to prepare for me a statement of the number of cases and deaths that had occurred since the disease became epidemic. When received I will forward it to be filed with this report. I learn that the deaths have been rather sudden, especially of people in good circumstances, and, occurring in a short time, have caused much excitement and anxiety. All seem to be of that form which, while assuming a typhoid appearance, yet cannot be said, except in a few cases, to be pure enteric fever, partaking to a certain extent of the features both of typhoid and malarial fevers.

The epidemic undoubtedly has been greatly aided by the very unsanitary condition of the town, and the sudden outbreak may be regarded as due to the action of impure drinking water. It does not seem to be confined to any one portion of the place, nor to any class or condition of people.

I most emphatically commend the energetic efforts of Dr. Reichard in his endeavor to remove the filth, &c., which would do so much to cause a pre-disposition to disease. In addition, I feel sure that the

want of proper guards as to the water supplied to the inhabitants should be looked upon as leading directly to the outbreak. The only safe way to remedy this will be to obtain the sole right to the spring and its surrounding grounds, and the removal of the works thither, thus avoiding the use of a conduit pipe, which, under the best conditions, is always liable to suspicion of leakage. By pumping directly from the spring well, no room is left for contamination save at the very outset, and by the proper precautions which should always be taken, this will be virtually nothing.

I append an analysis of samples of the water from the reservoir, furnished me by Dr. Reichard; also, a notice which was issued.

Respectfully,

W. B. ATKINSON,  
*Medical Inspector.*

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#### VI. REPORT ON THE SANITARY CONDITION OF BRISTOL.

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By WILLIAM B. ATKINSON, M. D., *Inspector.*

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BENJAMIN LEE, M. D.,

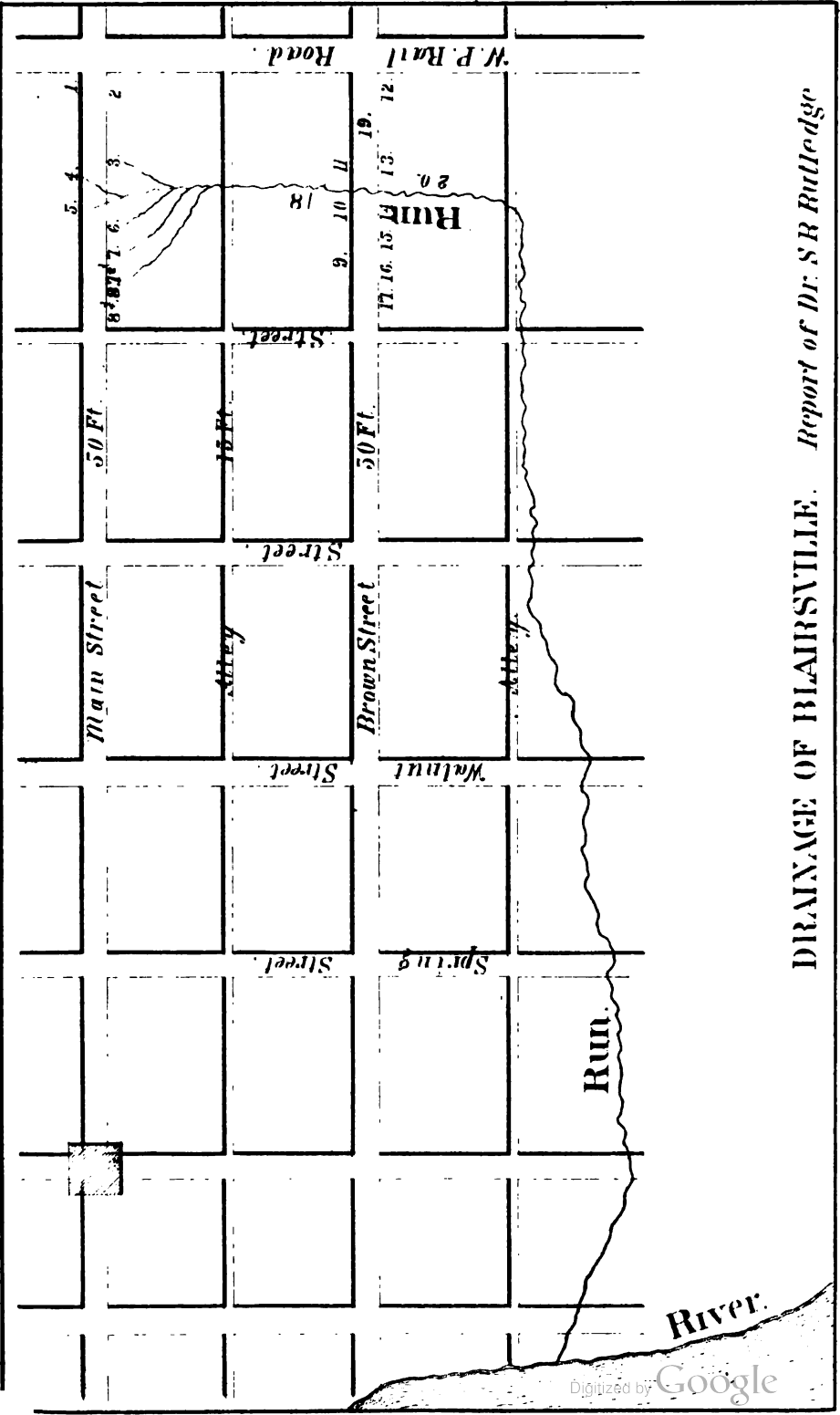
*Secretary and Executive Officer State Board of Health :*

DEAR SIR: In response to your instructions I visited the borough of Bristol, in Bucks county, and inspected Logan alley. This alley is about five or six feet in width and runs the entire length of the block, which is bounded on either side by Lafayette and Logan streets. There are eighteen houses on one side and sixteen on the other, all of which drain into this alley. Not only do the kitchens drain their refuse water and slop into it, but, much to my surprise, I found that nearly all the privies flowed directly into it. These privies so drained were merely small out-houses placed upon the back of each lot; none of the pits to receive the excreta were sunk below the level of the pavement, and some were even above the level. Thus everything that went through the hole in the seat at once drained more or less rapidly into this alley. The alley itself drained into a large marsh or sunken piece of ground on the side of the railroad, where the filth remained save in cases of heavy rains when it would be washed over into the neighboring creek.

A few, not more than two, wells are sunk on the east side and six on the west side, to a depth of say about four feet, forming a close vault, and are regularly cleaned as occasion may require.

I was informed that a few days prior to my visit an attempt had been made to clean the alley by the residents, on order of the sanitary





DRAINAGE OF BLAIRSVILLE. Report of Dr. S.R. Rutledge

committee of the borough council. Before this was done the alley was filthy in the extreme, with piles of dirt, ashes, weeds and rubbish on both sides banked against the fences, and in the center were pools of green scum, rendering the place impassable in many places.

I regard this alley in its present condition, and the marsh receiving its drainage, as highly prejudicial to the health of those living in the vicinity. Indeed, many of the residents assured me that they were suffering with "malaria," which they explained as aching of the bones, with languor, headaches, in some cases diarrhœa, and even an intermittent form of fever.

I saw Mr. J. Wesley Wright, clerk of the council, who informed me that that body was endeavoring to remove the evil. I assured him of our readiness to aid them in any way.

I would recommend that all of the open privies be removed and cemented vaults of sufficient depth be substituted; that the alley be thoroughly cleansed, the water way deepened to compel the drainage to be more circumscribed, and that the marsh at the end by the railroad be cleansed and filled with fresh earth. The sewage from the alley should be carried either by pipes or other form of drain directly into the creek.

I would say in conclusion that I was unable to find any evidence of contaminated water in the few wells that were used by some of the residents.

Respectfully submitted.

W. B. ATKINSON, M. D.,  
*Medical Inspector.*

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## VII. REPORT ON THE SANITARY CONDITION OF BLAIRSVILLE.

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By DR. S. R. RUTLEDGE.

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Dr. BENJAMIN LEE,  
*Secretary State Board of Health:*

DEAR DOCTOR: I received your communication of the 6th, requesting me to examine a reported nuisance on the property of George Wilkinson, of this place. I proceeded at once to examine the same. I find the drain from Mr. Wilkinson's property (Union Hotel) is joined by drains from other properties, making one exit on Brown street. I found nothing that would warrant me in the opinion that it was a nuisance, but recently our authorities had made some effort to improve the condition of the street by opening drains, etc., and I was informed that I had seen it under its most favorable condition. Scarcely any

material was passing out of the drain, and what did pass out seemed to be water with soap in it, such as would be obtained from washing the body or from bath tubs. However, it is claimed that dish water and water used about kitchens are thrown into the drains. This I did not witness. The mouth of the drain is exposed, and if the refuse water passes through that drain it will be a nuisance, as its exit is nearly in front of residences on same side of street. The drain does not terminate on the same side of the street on which it approaches, but is conducted across the street in a wooden box, 12 x 12 at least, and empties into the ditch on the opposite side of the street. The ditch is merely an excavation at the side of a cinder pavement.

I presume many complaints will be made, but whilst I searched carefully for grounds of complaint I could not say they existed at the time. But the foundation is laid for serious objections in the future by neglect to keep the surface drain in good condition. As this is very likely to occur, if an underdrain of twelve or sixteen inch terra cotta pipe was laid for one hundred and sixty feet from mouth of present drain it would avoid all trouble and drain everything. A difficulty exists as to who shall bear the expense, private parties interested or the authorities. If possible I will inclose diagram. If I have not been explicit enough inform me.

#### Explanation of the Diagram.

No. 1. R. R. station.

No. 2. Connell residence.

No. 3. Union Hotel (Wilkinson).

Nos. 4 & 5. Residences (Wilson & Maher).

No. 6. Residence (Mrs. Gibson).

Nos. 7 & 7½. Residences (Property of Wilkinson).

No. 8. Residence (Mr. Long).

No. 8½. Residence (Miss Campbell).

Nos. 9, 10 & 11. Residence (Wilkinson).

No. 12. Foundry (Tittle).

No. 13. Residence (Tittle).

No. 14, 15, 16 & 17. Residences.

No. 19. Is ditch at side of street coming through a culvert at R. R.

No. 20. Is a ditch running from Brown street to alley where run is.

No. 18. Is the drain from hotel, and 4, 5, 6, 7, 7½, 8, 9, 10 and 11.

Drain is a box drain until it reaches across Brown street to ditch, it is also covered; drain at nineteen and twenty is open; plenty of fall exists, except in very dry weather, but if a stream of water was turned in occasionally, it would remove any filth. Our town is supplied with water from the Conemaugh river, it is pumped into a reservoir and distributed through pipes to the town; we have a pressure of fifty-three

lbs. to the square inch at the highest point in town; basin is about one hundred feet above the town. We have no sewers, except private arrangements; we need a great improvement on privy vaults.

Respectfully,

S. R. RUTLEDGE.

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#### VIII. REPORT ON THE SANITARY CONDITION OF ALTOONA AND JOHNSTOWN.

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By ED. WM. GERMER, M. D., *President of the Board.*

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Dr. BENJAMIN LEE,

*Secretary State Board of Health :*

DEAR DOCTOR : I left Harrisburg, July 15, at 1 A. M., and stopped until 8 P. M., at Altoona. The city is spread over several hills; and in the center of the narrow valley, along the business street of the town, there is a good deal of room left for sanitary improvements. The streets ought to be paved and need proper drainage. The garbage ought to be hauled away regularly. All over the area occupied by the large railroad shops everything is in proper order and kept clean, and in front of the machine shops you find beautifully arranged flower beds, something rarely found at such places. There are some city sewers without regular outlets emptying in the field, and if the city is increasing the owners of lots in that vicinity will revolt, and I advised Professor Dudley, of the board of health, to be careful in building sewers to make a good plan first, as many other cities blundered in that direction badly.

There are no sewers along the hills and some of the gutters are defective. On the top of the hill cows and hogs took their morning walk and left their excrements on the sidewalks. On account of a heavy rain I visited only the railroad company reservoir two miles from town. The water ought to be good but the reservoir needs a good fence to keep the cattle, the hogs and the tramps out. The city reservoir at Kittanning point I had seen before, and learned that they are cleaning away old barns and privies around there. At my next visit I will see about it, and report. The Altoona board of health is very active and did a good deal of hard work in spite of great opposition and they are now waiting for the decision of our Attorney General about the removal of nuisances.

I visited also the new hospital, a fine institution on the hill side, with excellent ventilation and heating apparatus, high rooms for about thirty to fifty patients and a veranda ten feet wide all around the



building and the most beautiful view over the valley. There were seven patients in the hospital and a couple of trained nurses. There are some five acres of ground belonging to the institution, which was built by the State and the railroad company. Next morning I visited Johnstown, Cambria county. It is a very nice place, is laid with good paved streets, fine crossings and no rubbish laying around in heaps. The burgess, whose name I did not learn, is a very active go-a-head member of the bar. From Johnstown I rode to Pittsburgh, passing the soldiers' camp at Idlemer, New Greenville; between Pittsburgh and Erie there was another camp and many people went to see the boys in blue. In the cars I found the most abominable drinking water, polluted with filth. The railroad employés excused themselves by saying that the river at Pittsburgh was bad after the heavy rain. But I think the proper way would be to procure filters and clear the water for the passengers to prevent sickness.

Very respectfully yours,

E. W. GERMER.

## APPENDIX C,

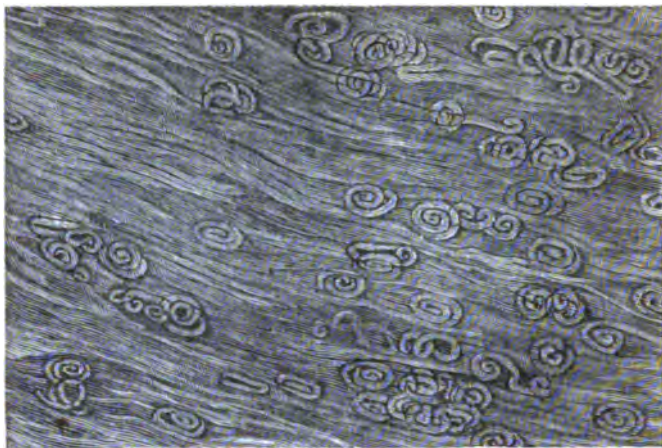
### REPORTS ON EPIDEMICS AND SPECIAL SOURCES OF DISEASE.

1. Report on a fatal outbreak of trichiniasis at Bethlehem—E. A. Rau.
2. Report on an outbreak of small-pox at Fairview (Mountain Top)—Lewis H. Taylor, M. D., Medical Inspector.
3. Report on an outbreak of small-pox at Emporium—R. P. Heilman, M. D.
4. Report on an epidemic of typhoid fever at West Elizabeth, Allegheny county—L. H. Hunter, Inspector ; Benjamin Lee, Secretary.
5. Note on an epidemic of typhoid fever at South Pittsburgh—Benjamin Lee, Secretary.
6. Report on an epidemic of typhoid fever at the Glasgow Iron Works, Montgomery county—Benjamin Lee, M. D., Secretary ; William B. Atkinson, M. D., Medical Inspector.
7. Report on an alleged case of small-pox at Mogeestown, Montgomery county, by Wm. B. Atkinson, M. D., Medical Inspector.

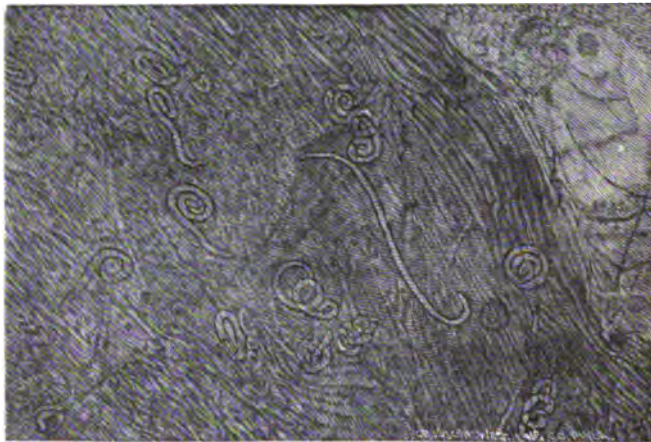
#### I. AN ACCOUNT OF SEVERAL CASES OF TRICHINIASIS WHICH OCCURRED IN BETHLEHEM, PA.

By EUGENE A. RAU.

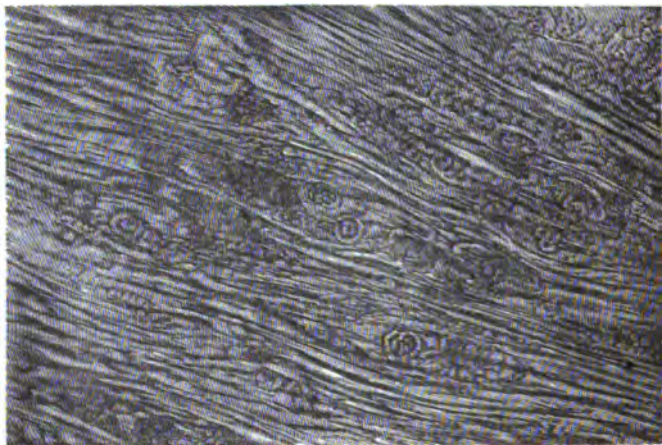
It is not within the scope of this brief report to refer to the medical treatment in the cases of a family who recently suffered with trichiniasis; but to note a few facts in regard to the microscopical examinations made by the writer. On February 8, samples of pork were submitted to me for examination by Dr. J. H. Wilson, being part of the same lot of meat as that used by a family who were apparently suffering with trichiniasis. Thin sections were cut from parts of a shoulder and of a ham, also portions of meat from the ribs and vertebra were examined microscopically, all revealing various numbers of trichinae, frequently as many as six to eight to a field view, the diameter of which was .5 mm. An eight-tenths objective was employed on my microscope with an A eye-piece, yielding sufficient amplification to obtain the desired results. The family, consisting of man and wife and daughters aged five and thirteen, for several days ate freely of the meat of a hog of their own raising, which was slaughtered on January 6. It is hardly necessary to note that the meat consumed was imperfectly boiled or fried, nor were the family aware of the possible danger that might result from a disregard of these precautions.



No. 1.—Specimen taken from the Deltoid muscle of Miss A. S., aged 13 years, a victim of Trichinosis. Died at Bethlehem, Penna., February 19th, 1886.



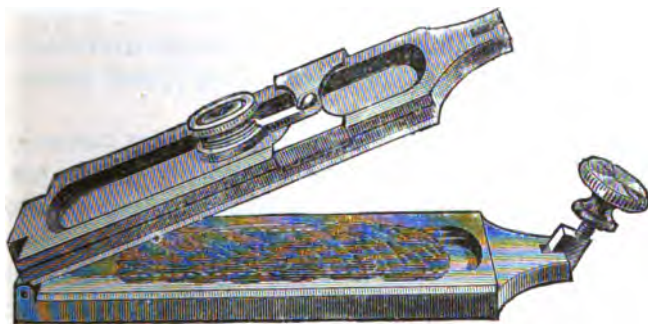
No. 2.—Another specimen from the same case. Length of Trichina stretched out, 1-30 inch; diameter, 1-700 inch. Magnified 38 diameters.



No. 3.—Specimen taken from the pork which caused the death of Miss A. S. and her mother. Bethlehem, Penna., February, 1886.



No. 4.—Single Trichina, magnified 280 diameters.



No. 5.—The Trichinoscope.



No. 6.—Mode of using the Trichinoscope.

On the 13th of January and for several days succeeding the family became ill with the usual symptoms of diarrhœa and vomiting, followed by severe muscular pains, fever, etc. Medical aid was summoned but afforded no relief, and a change of physicians was made. Dr. J. H. Wilson taking charge of the cases. After a diagnosis had been made by Dr. Wilson examinations of the pork used revealed the results as previously stated.

On February 19 the daughter thirteen years of age died, and at a *post mortem* a small portion of the deltoid muscle was excised by Dr. Wilson, which, after being placed under my microscope, was found to be largely infested, showing twelve to eighteen trichinæ, and in some parts forty-two to a field view. This latter examination completed the chain of evidence thus far and no further examinations were made in this case. After preparing specimens for the microscope and selecting such from the human subject as appeared of most interest I made photographs with a two-thirds objective, and herewith submit the result of three of the best exposures. In one of the photographs it will be noticed a trichina became sufficiently stretched to enable me to make a measurement, its length being  $\frac{1}{8}$  and diameter  $\frac{1}{16}$  of an inch.

Not the least interesting feature was the fact that for two days these helminths, while temporarily placed in water on a slide under thin glass covers, showed considerable activity, coiling and uncoiling, especially after being freed from the muscular fibres. None of the mature intestinal trichinæ were examined. On March 8 the mother of this family died and a *post mortem* resulted in finding the muscles infested to the following extent: In the deltoid three to nine, rectus femoris two to six and in the diaphragm one to three to a field view. The following organs were found free of trichinæ, viz: Lungs, heart, spleen, liver and kidneys. The liver, however, was found to be in a state of granular degeneration. Photographs of sections of the trichinous meat used by the family were made and one of the best is herewith submitted, showing the parasites in an encysted condition. By request I examined five of the chickens that were killed for the use of the family, but in no case could I find any trichinæ, although the fowls had unknowingly been fed with some of the trichinous pork. I examined portions of meat of two other hogs raised on the same premises with the one infested but found these free of the parasites. The owner of the animals positively asserts that his swine had always appeared to be in a healthy condition, notwithstanding rumors to the contrary. According to estimates the number of trichinæ infesting a cubic inch in these cases were as follows: In the daughter 30,000 to 100,000, in the mother 3,000 to 26,000 and in the pork used 17,000 to 23,000. To what extent trichinous pork has been consumed in this vicinity has not been ascertained. Thorough boiling undoubtedly

kills the parasites, and as this is usually done it greatly decreases the number of cases otherwise possible.

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## II. REPORT ON THE INTRODUCTION OF SMALL-POX INTO MOUNTAIN TOP, LUZERNE COUNTY, BY HUNGARIAN IMMIGRANTS.

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By BENJAMIN LEE, *Secretary*, and LEWIS H. TAYLOR, M. D., *Medical Inspector*.

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On the 20th of March, the Secretary received private information that the steamer British Prince was lying off New Castle, and that there was reason to suppose that there was infectious disease on board of her. An agent was dispatched to the wharf to observe the disembarkation of the passengers on Sunday, the day following; the vessel did not arrive, but it was observed that there was an ambulance in waiting.

Upon her arrival the next day, the ambulance was again on the wharf, and no passenger was allowed to embark until the patient had been removed. The company's agents on being questioned did not deny that the case was one of small-pox, and the fact was subsequently verified. The case was taken to the Municipal Hospital and there recovered, the disease not having been communicated to any one so far as is known. The case was discovered soon after the vessel left Europe. It was at once isolated; the entire population of the vessel was examined in regard to the possession of satisfactory vaccination marks, and wherever these were absent or insufficient vaccination or revaccination was performed. A considerable proportion of the steerage passengers, among whom the case of small-pox occurred, were Hungarians. Shortly after this time a party of newly-arrived Hungarians made their appearance in the village of Fairview or Mountain Top, Luzerne county, and were lodged in the house of Jacob Drendle. They had not been there very long when one of Drendle's children sickened, and Dr. Solt, who was called to attend it, soon made up his mind that it was suffering from small-pox.

The attention of the Secretary being called to the existence of the disease at that point, he at once telegraphed to Dr. Lewis H. Taylor of Wilkes-Barre, Medical Inspector to the Board, instructing him to proceed at once to Mountain Top; see that efficient quarantine was observed, and that universal vaccination was practiced. The following letter of Dr. Taylor, gives additional information in regard to the outbreak. The secretary sent fifty vaccine points from John Wyeth's vaccine propagating establishment, with instructions to vaccinate gen-

erally, and report to the Board for compensation in cases where the parties were too poor to pay for the service. The following is his report :

WILKES-BARRE, PA., *April 14, 1886.*

Dr. BENJAMIN LEE,

*Secretary State Board of Health :*

MY DEAR Sir: In obedience to your instructions of April 10, I have visited Fairview twice in order to investigate the reported cases of small-pox in that village. I find in the family of George Drendle seven children ill with the disease, the oldest, a girl about fourteen years of age, being convalescent, four of the others having genuine confluent small-pox and the two others having the modified form. Thus far the contagion has not spread from the house in which it originated and as strict quarantine is maintained there seems to me but little danger of an epidemic.

It is impossible to tell at present the source of the contagion. It is supposed however that it was introduced by two Hungarians recently from shipboard who visited Drendle's house about ten or twelve days before the first patient developed the disease. What became of these two men subsequently is not known as they disappeared from Fairview in the night and no one knows whither they went. The first patient taken with the disease was a girl about fourteen years of age upon whom the eruption appeared about March 21, it being definitely determined by Dr. Dieffenderfer, of Ashley, who made his first visit upon March 26.

Since March 28, strict quarantine has been maintained, no person being allowed to leave the house and none allowed to visit it. Five Hungarians who were living in the adjoining end of the same house are also quarantined. All of the members of the families immediately adjoining have been vaccinated and vaccination has been generally performed throughout the town.

The father of the children affected, has had small-pox and the mother has been thoroughly vaccinated. An infant at the breast has thus far escaped. Quarantine is maintained by the township authorities.

Respectfully submitted,

LEWIS H. TAYLOR.

The prompt measures thus taken by the local authorities and by the Board were therefore happily successful in confining the infection to a single family. Had it developed however in the midst of a densely populated manufacturing town, the record might have been less pleasant reading, and the question cannot but suggest itself, "Is there any reason, why our people in rural villages or in cities be subjected to the risk of this loathsome disease from newly-arrived immigrants? The secretary is not in a position to state absolutely that the Hungarians who carried it to Mountain Top, were a part of the steerage of the British Prince, but it must be allowed that the



circumstantial evidence is very strong in support of that supposition.

And this brings us to the consideration of two facts; the first, that pointed out by Dr. John H. Rauch of Chicago, in his admirable report on the gulf and seacoast quarantine of the United States made in obedience to instructions from the State board of health of Illinois, viz : That the board of health of Philadelphia does not insist on vaccine examinations, and vaccination of immigrants arriving at the port of Philadelphia unless small-pox has actually existed on the voyage; and the second, that from the first day of October until the first day of June, the Lazaretto Hospital is closed and Philadelphia is without quarantine. The Secretary would therefore submit the following propositions to the judgment of the board :

*First.* The quarantine of the port of Philadelphia exists not alone for the protection of the city of Philadelphia, but of the State of Pennsylvania and indirectly of the entire country.

*Second.* The period from October 1, to June 1, being that in which small-pox prevails with the greatest virulence, precautions should be adopted to prevent the disembarkation of infected persons or infected clothing and baggage during this season with the same care that is exercised during the alternate period in reference to cholera and yellow fever.

Respectfully submitted,

BENJAMIN LEE,  
*Secretary and Executive Officer.*

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### III. REPORT ON AN OUTBREAK OF SMALL-POX AT EMPORIUM —INTRODUCED BY AN IMMIGRANT FROM HAVRE.

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By Dr. R. P. HEILMAN.

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EMPORIUM, PA., *July 30, 1886.*

DR. BENJAMIN LEE,

*Secretary State Board of Health, 1532 Pine street, Philadelphia.*

DEAR DOCTOR: Yours of 26th inst. enquiring concerning the recent cases of small-pox in our borough at hand. In reply will say that a young man by the name of Mike Cwald embarked on the St. Laurent at Havre, was nine days on board vessel, landed at New York and came direct here. Was here two days when he was taken sick. This was near the last of April. There was no record kept of the dates, and, strange as it may seem, they have forgotten the day on which he arrived. On May 1 he came to me on account of not feeling well and scattered over



his person were from two to three dozen pustules. Diagnosis, varioloid. Patient had been vaccinated when quite young. Present age, twenty.

On 15th May two other members of family were attacked with small-pox. These were unvaccinated. On May 28 one other, not vaccinated, had small-pox and two others, vaccinated, had varioloid. On May 30 two others, vaccinated, had varioloid, and on June 5 I myself was taken with varioloid.

John Cwald,	aged 45,	vaccinated,	varioloid,	May 30	taken sick.
Mike Cwald,	" 20,	"	"	" 1	" "
John Cwald, Jr.,	" 17,	"	"	" 30	" "
Henry Cwald,	" 11,	"	"	" 28	" "
Simon Cwald,	" 9,	"	"	" 28	" "
Edward Cwald,	" 6,	not vaccinated,	variola,	" 15	" "
Annie Cwald,	" 4,	"	"	" 28	" "
Andrew Cwald,	" 2,	"	"	" 15	" "
R. P. Heilman,	" 35,	vaccinated,	varioloid,	June 5	" "

The ones first taken sick were the worst. The boy aged six had over his face the confluent eruption, but over his body the pustules were discrete. None of the others were so bad. There were also different degrees of the varioloid. The family was entirely isolated during the whole time of their sickness.

I did not visit the patients in the Cwald family often enough to give any exact data respecting the individual cases.

There seems to be a little peculiarity about my own case which to me seems worthy of notice. On the evening of June 5 I was taken with a decided chill. I had some headache during the day and felt a little weak in the back, but thought that came from walking a good deal (I was delegate to the State Medical Society in Williamsport at the time). The chill lasted about two hours. After this wore off my fever ran up to  $106^{\circ}$ , and though I was alone I realized that I was somewhat delirious, but I was away from home and determined to keep my senses if possible. I took two drops tr. aconite root every hour and was glad to find the next morning that my temperature had dropped to  $104^{\circ}$  and pulse, which was 160, had dropped to 120 per minute. I took earliest train I could get for home. I continued aconite, one drop every hour, and one-quarter drop fl. ex. belladon. with it. Temperature and pulse remained about the same until second day when temperature fell and rash began to appear under the skin, and here is where the interesting part comes in. The rash seemed to be quite thick. I now began to take five gr. doses of salicylic acid every three hours. The next day where the rash spots had started were small echmotic spots, and two days afterwards these had disappeared. Only a very few pustules appeared and these were imperfect ones. They dried up without pus forming in them, and scales came off from them within one week from their beginning. Now I believe that the

salicylic acid saved me from a prolonged and severe sickness. Of course one case proves nothing, but its worth thinking about. The idea is not new with me. I do not know to whom to give the credit of it. I gleaned it from a journal in my readings and chanced to remember it at the right time, but I have forgotten who spoke of it and have even forgotten the journal.

I myself assumed the authority of isolating the family. I explained to them the importance of it and also told them that unless they obeyed me they would be locked in a cell in jail. They were of the ignorant class and therefore the threat had some weight. Whatever they wanted they would call to the neighbors, who were relatives, and ask them to get it for them. They would get what they wanted and leave it at the yard gate and when they were gone some one of the family would come out and get it for them. I also told them that under no circumstances should they allow anyone to come into the yard that did not belong there.

Respectfully,

R. P. HEILMAN.

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#### IV. TYPHOID FEVER AT WEST ELIZABETH, ALLEGHENY COUNTY.

By BENJAMIN LEE, *Secretary*, and L. H. HUNTER, *Sanitary Inspector*.

The fact that three epidemics of typhoid fever should have been in full blast at the same time in different parts of the State is a sufficient commentary on the let-well-enough-alone policy which has guided its sanitary legislation in years past, and a convincing proof that the time was ripe for the creation of a State Board of Health. The first of these in point of time was that at West Elizabeth, a mining village of about 1,000 inhabitants in Jefferson township, Allegheny county, on the Monongahela river, twenty-one miles nearly south of Pittsburgh. The first intimation the Board had of its existence was contained in a letter from the town council, dated July 17, requesting an investigation as to the cause of a disease which was spreading rapidly in the town and had caused one death. The Secretary immediately telegraphed to Inspector Hunter, Inspector of the Allegheny district, requesting him to visit the place and report.

He reported eighty-nine cases of a fever considered by a majority of physicians in attendance to be typhoid, while others pronounced it malarial. One of the earliest cases, No. 2, in fact, and soon after No. 3, were those of a dairyman and his wife (the latter fatal); and it was noticed that a very large proportion of the cases following occurred among his customers.

Mr. Hunter found the whole sanitary condition of the village as bad

as could well be, "situated in a kind of basin, the middle being swampy ground, with but one sewer, the privies neglected, and the wells exposed to pollution from them." Stimulated by the Board, the authorities at once went to work to remedy the most obnoxious of these nuisances. Documents of the Board were freely distributed, giving instructions with regard to disinfection. Samples of water were taken from a large number of wells, and tested under the direction of Dr. Snively, the registrar of Pittsburgh. Several found to contain organic matter were condemned and sealed. At the request of the Board, Dr. Snively visited West Elizabeth in order to determine the nature of the disease. All the cases which he saw presented symptoms of malarial rather than typhoid fever. A few days later, however, an opportunity for an autopsy presented itself in the person of a patient whom he had not seen. Of this he reports as follows under date of July 30th: "On Thursday, July 29, I visited the town of West Elizabeth, and in the presence of Drs. Pierce, McGrew, Welsh, Shaffer, Fife, Riggs, Van Kirk, of East Elizabeth, and Van Kirk, of McKeesport, examined the body of — Graham, aged thirty-five years. The attending physician, Dr. Pierce, stated that his illness was of twenty-two days duration. Autopsy twenty-two hours after death. The characteristic lesions of typhoid fever were demonstrated to the satisfaction of all the physicians present."

Without waiting for this report, however, the Secretary had telegraphed orders to the town authorities that all discharges of the sick must be disinfected and buried. This order was followed up by the following letter of instructions to the physicians of the place:

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
*Executive Office, 1532 Pine St., Philadelphia.*

DEAR DOCTOR: The State Board of Health requests that you will keep a record of all cases under your care in connection with the present epidemic at West Elizabeth, and report to this office at the end of each week, giving name of patient, sex, age, when taken sick, water used, character of illness, result, and any other points that you may deem of interest. Whether all the cases are typhoid fever or not, the interests of the public health demand that their excreta should be treated as though they were. You will therefore give positive instructions to have the discharges disinfected on passing, and then buried. The sick must not be allowed to use the same out-houses as the well, even during convalescence. All the privy vaults and cesspools in the neighborhood should be disinfected, emptied, and then disinfected again. The enclosed circular contains instructions for disinfection.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE,  
*Secretary and Executive Officer.*

The following records of cases treated by Dr. McGrew, which he has been kind enough to furnish me, show clearly that all the cases of fever under treatment during the epidemic were not true typhoid.

No. 1. Have had only one case like this in or about town. Diagnosis typhoid fever. Recovery. The patient came home from Mansfield, Pa.

## No. 1. Robert Snee, age 30.

Date, July 24.	Hour.	Pulse.	Temp.	SPECIAL HISTORY—PHYSICIAN'S SPECIAL DIRECTIONS.		
				STOOL, URINE, PAINS, SLEEP, ETC.	MEDICINE, FOOD, DRINKS, ETC.	
Day of illness. 5	8 A. M. 7.30 P. M.	108 84	103 102.2	Had diarrhoea for 4 or 5 days, pain in head, back and limbs.	Quinine 15 grains. Quinine 15 grains.	M E
6	8 A. M. 6 P. M.	72 84	100 103	2 stools. 3 stools.	Quinine 15 grains at night only, with ac. sul. arom.	M E
7	7.30 A. M. 8 P. M.	72 80	100.8 102.6	2 stools. 2 stools.	Quinine continued.	M E
8	7 A. M. 7 P. M.	72 84	101.4 103.2	1 stool. 3 stools.	Quinine continued.	M E
9	6 A. M. 7.30 P. M.	84 84	101.4 102.6	2 stools. 2 stools.	Quinine continued.	M E
10	8.30 A. M. 8 P. M.	84 90	101 102.4	2 stools. No stool.	Ac. hydro-chlor. dil., Sherry wine after eating; quinine at night.	M E
11	Did not see him 7 P. M.	90	102.4	4 stools to-day.	Treatment continued.	M E
12	6.30 A. M. 7.30 P. M.	84 90	101 103	No stool. No stool.	Treatment continued.	M E
13	8.30 A. M. 8 P. M.	84 90	101 102.4	No stool. No stool.	Treatment continued.	M E
14	7 A. M. 8 P. M.	84 90	101 102.6	1 stool. No stool.	Treatment continued.	M E
15	8 A. M. 8 P. M.	84 90	100.4 102	No stool. 1 stool.	Treatment continued.	M E
16	7.30 A. M. 7 P. M.	84 88	100.6 102	No stool. No stool.	Ac. hydro-chlor. dil. Quinine at night 15 grains.	M E
17	7 A. M. 7.30 P. M.	84 90	99.8 102	No stool. No stool.	Quinine at night 15 grains.	M E
18	7 A. M. 7 P. M.	80 88	99 101.6	No stool. No stool.	Quinine at night 10 grains.	M E
19	7 A. M. 7 P. M.	78 80	98.8 100.4	No stool. No stool.	Quinine at night 10 grains.	M E
20	7 A. M. 7 P. M.	80 84	98.8 101	No stool. No stool.	Quinine at night 10 grains.	M E
21	7 A. M. 7 P. M.	80 84	97.6 101.2	No stool. No stool.	Quinine at night 15 grains.	M E
22	7 A. M. 7 P. M.	72 84	98.5 101.4	2 stools. No stool.	Quinine at night 15 grains.	M E
23	7 A. M. 6 P. M.	72 78	98.5 99.4	No stool. No stool.	Quinine continued in 5 gr. doses.	M E
24	7 A. M. 5 P. M.	78 72	90.5 98.5	1 stool. No stool.	Quinine continued in 5 gr. doses.	M E
25	7.30 A. M.	72	98.5	1 stool.	Treatment discontinued—patient discharged.	M

No. 2. Have had fourteen cases similar to this in and about town. Duration of illness from five to ten days. Recovery in all.

No. 2. Mrs. Micky, age 62.

Date, July 2.	Hour.	Pulse.	Temperature.	SPECIAL HISTORY—PHYSICIAN'S SPECIAL DIRECTIONS.		
				STOOL, URINE, PAINS, SLEEPING, ETC.	MEDICINE, FOOD, DRINKS, ETC.	
Day of sick- ness 1	7 P. M.	100	108	Headache and vomiting; had taken magnesia; tenderness of stomach.	Hydrg sub-mr. gr. X. Rhel. gr. V.	M E
2	7 A. M.	96	102	3 stools; pain in back severe.	Seidlitz powd. night and morning; quin. 20 grs.	M E
3	8 A. M. 7 P. M.	90 90	99 101	1 stool; feels well but feeble. No stool.	Seidlitz powder and quin. 20 grs.	M E
4	6 A. M. 8 P. M.	90 90	99 100	1 stool; stomach sore. No stool; sleeps well at night.	Seidlitz powd. in morn'g. Quinine 10 grs.	M E
5	7 A. M. 8 P. M.	80 84	99 98.5	No stool; appetite good. 1 stool.	Seidlitz powder. Quinine discontinued.	M E
6	9 A. M.	80 84	98.5 98.5	1 stool; came down stairs in m'g. No stool.		M E
7	7 P. M.	84	98.5	No stool; been down stairs all all day; feels well but pain in back.	Discharged.	M E

## No. 3. Isaac Bedell, age 28.

Date, July 8.	Hour.	Pulse.	Temperature.	SPECIAL HISTORY—PHYSICIAN'S SPECIAL DIRECTIONS.		
				STOOL, URINE, PAINS, SLEEP, ETC.	MEDICINE, FOOD, DRINKS, ETC.	
Day of illness.						
1	9 P. M.	72	108.5	Bowels costive; vomiting; soreness of stomach.	Hydr. sub-mur. grs. X. Rhei. grs. V.	M E
2		72	98.5	3 stools; feels well; appetite good.	No medicine.	M E
3		72	99	No stool; bilious vomiting; pain, stomach and back.	Seidlitz powder every 4 hours.	M E
4		84	102	2 stools; headache, backache.	Antipyrin grs. 90.	M E
5		84	102	1 stool; pain in back.	Antipyrin grs. 90.	M E
6		84	102.5	2 stools; pain in back.	Antipyrin grs. 90.	M E
7		80	100	No stool; pain in back severe.	Antipyrin grs. 90.	M E
8		80	100	No stool; vomiting all night.	Antipyrin grs. 90.	M E
9		80	99	No stool; urine bloody.	Antipyrin grs. 90.	M E
10		72	99	No stool; urine bloody; vomiting.	Antipyrin stopped.	M E
11		98	101.2	No stool; urine retained.	Quinine 10 grs. T. in. d.	M E
12	8.30 A. M. 7.30 P. M.	84 84	101.4 101.2	No stool.	Quinine 10 grs.	M E
13	9 A. M. 7 P. M.	84 84	101.4 101.4	No stool.	Quinine 20 grs.	M E
14	8 A. M. 6 P. M.	72 72	99 98.5	No stool. 1 stool.	Quinine 10 grs. Podoph 1 gr.	M E
15	9 A. M. 7.30 P. M.	72 72	99 101.4	No stool. No stool; vomiting.	Podoph 1½ grs. Quinine 10 grs.	M E
16	9.30 A. M. 7 P. M.	84 84	100 101	1 stool.	Quinine 10 grs.	M E
17	10 A. M. 6 P. M.	72 84	98.5 100	5 stools. 2 stools.	Quinine 10 grs.	M E
18	10 A. M. 7 P. M.	84 78	100.4 100	1 stool.	Quinine 10 grs.	M E
19	10 A. M. 5 P. M.	78 78	99.4 100	1 stool. No stool.	Quinine 10 grs.	M E
20	10 A. M.	72	99	1 stool; urinated this morning.	Quinine 10 grs.	M
21	9 A. M.	72	98.5	1 stool; urinated this morning.	Quinine 10 grs.	M
22	4 P. M.	84	102	1 stool; urinated this morning.		E
23	11 A. M.	72	98.5	1 stool.	Discharge.	M

Catheter used from 11th to 20th day; urine showing blood by microscope on 6th, 10th and 11th day.

## No. 4. Albert Wetzel.

Day of illness.	Hour.	Pulse.	Temperature.	SPECIAL HISTORY—PHYSICIAN'S SPECIAL DIRECTIONS.		
				STOOL, URINE, PAINS, SLEEP, ETC.	MEDICINE, FOOD, DRINKS, ETC.	
1	12 M.	84	103.5		20 grains quinine.	M E
2	9 A. M. 7 P. M.	84 84	102 101		20 grains quinine. 15 grains quinine.	M E
3	8 A. M. 6 P. M.	84 72	100 99.5		15 grains quinine. 15 grains quinine.	M E
4	9 A. M. 5.30 P. M.	84 72	101 99		20 grains quinine. 5 grains quinine.	M E
5	8.30 A. M. 6 P. M.	72 72	98.5 98.5		No quinine given. No quinine given.	M E
6	9 A. M. 6 P. M.	72 84	98.5 103.5		No quinine given. 20 grains quinine.	M E
7	8 A. M. 7 P. M.	84 84	102 102		15 grains quinine. 15 grains quinine.	M E
8	7 A. M. 6 P. M.	84 84	101 101		15 grains quinine. 15 grains quinine.	M E
9	7 A. M. 7 P. M.	84 84	102 99		20 grains quinine. 5 grains quinine.	M E
10	7 A. M. 5.30 P. M.	72 84	98.5 102.4		No quinine given. 20 grains quinine.	M E
11	7 A. M. 7 P. M.	72 84	98.5 101		No quinine given. 15 grains quinine.	M E
12	7 A. M. 7 P. M.	84 72	103.5 101		40 grains quinine. 20 grains quinine.	M E
13	6.30 A. M. 8 P. M.	72 72	98.5 98.5		5 grains quinine. No quinine given.	M E
14	6 A. M. 7 P. M.	72 72	98.5 100		No quinine given. No quinine given.	M E
15	8 A. M. 8 P. M.	72 72	98.5 100		No quinine given. No quinine given.	M E
16	7 A. M. 5 P. M.	72 72	98.5 98.5		No quinine given. No quinine given.	M E
17	8 A. M. 7.30 P. M.	72 72	98.5 100		No quinine given. 5 grains quinine.	M E
18	7.30 A. M. 7.30 P. M.	72 84	98.5 102		No quinine given. 15 grains quinine.	M E
19	7.30 A. M. 5 P. M.	72 72	98.5 100		No quinine given. 15 grains quinine.	M E
20	5.30 A. M. 7 P. M.	72 72	98.5 100.6		No quinine given. 15 grains quinine.	M E
21	6 P. M.	72	98.5		No quinine given.	E
22	5.30 P. M.	72	98.5		No quinine given.	E

Case continued.

98° + 99° + 100° + 101° + 102° + 103° + 104° + 105° + 106° + 107°

No restriction of diet, and podophyl. given every night or Seidlitz powders in morning. The patient has never been unable to get out of bed and walk across the floor.



## No. 5. Mary Hopkins, aged 22.

Date, July 8th.	Hour.	Pulse.	Temperature.	SPECIAL HISTORY—PHYSICIAN'S SPECIAL DIRECTIONS.		
				STOOL, URINE, PAINS, SLEEP, ETC.	MEDICINE, FOOD, DRINKS, ETC.	
Day of illness.						
1	10 P. M.	96	103.6	Bowels costive; headache severe; bilious; vomiting.	Hydr. sub-mur. grs. X. Rhel. grs. V.	M E
2	8 A. M.	84	101	3 stools; tenderness of hepatic region.	Seldlitz powders. Quin. grs. XV, T. i. d.	M E
3	8.30 A. M.	84	101	1 stool; complained of pain in stomach.	Seldlitz powder. Quinine.	M E
4	9 A. M.	84	101	No stool; pain in stomach; headache.	Seldlitz powder. Quinine X T. i. d.	M E
5	8 A. M.	84	99	1 stool; bilious vomiting.	Seldlitz powder every 4 hours.	M E
6	8 A. M.	84	102.2	2 stools; no headache.	Seldlitz powder. Quin. grs. XV T. i. d.	M E
7	8 A. M.	84	102	No stool; pain after eating.	Seldlitz powder. Quin. grs. XV T. i. d.	M E
8	8.30 A. M.	84	98.5	2 stools; pain after eating.	Seldlitz powder. No quinine.	M E
9	9 A. M.	84	100	1 stool; pain after eating.	Seldlitz powder. No quinine.	M E
10	8 A. M.	84	102	3 stools; vomited through the night.	Seldlitz powder. Quinine 20 grs.	M E
11	8.30 A. M.	84	100.4	3 stools; pain in stomach.	Quinine 10 grs. T. i. d.	M E
12	8 A. M.	84	101	2 stools; bilious vomiting; pain in stomach.	Seldlitz powders. Quinine at night only.	M E
13	7 A. M.	84	99	1 stool; vomiting last night.	Seldlitz powders. Quinine at night only.	M E
14	8.30 A. M.	80	98.5	No stool; sleeps well.	Seldlitz powders. No quinine.	M E
15	9 A. M.	80	98.5	3 stools; sleep good.		M E
16	9 A. M.	84	100	1 stool; sleeps and eats well.	Quinine discontinued.	M E
17	9 A. M.	84	100.2	1 stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
18	10 A. M.	84	100.2	No stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
19	9 A. M.	108	100.4	1 stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
20	12 M.	84	100	1 stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
21	9 A. M.	84	98.5	1 stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
22	2 P. M.	96	102	1 stool; sleep good.	Liq. pot. et ars. gtts. X T. i. d.	M E
23	2 P. M.	84	98.5	1 stool; sleep good.	Discharged.	M

PITTSBURGH, July 30, 1886.

BENJAMIN LEE, M. D.,

*Secretary State Board of Health of Pennsylvania :*

DEAR DOCTOR: I have the honor to report that of ten samples of well water furnished me by your inspector, Mr. L. H. Hunter, two of the samples, when subjected to Nessler's test, exhibited decided evidences of organic matter. Eight of the samples exhibited no traces of organic matter when subjected to the same test.

I have to report further that by direction of your inspector I, on Thursday, July 29, visited the town of West Elizabeth, and, in presence of Drs. Pierce, McGrew, Welsh, Shaffer, Fife, Riggs, Van Kirk, of East Elizabeth, and Van Kirk, of McKeesport, examined the body of — Graham, aged thirty-five years, R. R. street. The attending physician, Dr. Pierce, stated that his illness was of twenty-two days duration, but could furnish me with no clinical record of the case. Autopsy twenty-two hours after death. The characteristic lesions of typhoid fever were demonstrated to the satisfaction of all the physicians present.

The ileum was the only portion of the small intestine examined. I demonstrated the lesions (ulcerations of Peyer's patches) in different stages, but farthest advanced and most numerous as ileo-cæcal valve was approached. The liver weighed three and three-quarter pounds. The spleen weighed nine ounces. Stomach found partially filled with liquid containing fæcal matter and much corroded. Damage evidently not all due to *post mortem* causes.

Yours truly,

W. SNIVELY.

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V. NOTE ON AN EPIDEMIC OF TYPHOID FEVER AT SOUTH  
PITTSBURGH.

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By BENJAMIN LEE, M. D., *Secretary.*

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Previous to the outbreak at West Elizabeth the Board had, at the urgent request of Crosby Gray, Esq., the efficient and energetic health officer of Pittsburgh, made an investigation into the condition of certain bone-boiling establishments, known in the dialect of that region as "schinderies," which it was feared might pollute the Monongahela river, from which what is called South Pittsburgh draws its water supply. This is the region of the city alluded to by the Secretary as so faulty in its drainage arrangements, in his paper before the sanitary convention entitled "An Epidemic of Diphtheria Traced to its Source."

There was reason to fear that it was likely again to afford a text for

a sanitary sermon. The result of the inspection was decidedly condemnatory, and the occurrence of the above-described pestilence farther up the stream evidently intensified the risk. Scarcely had the necessary orders for the abatement of these nuisances been issued when their importance was made apparent by the simultaneous occurrence of several cases of undoubted typhoid fever in South Pittsburgh. Two cases of the same disease were discovered on a "shanty-boat," on the Allegheny river, lying not far from the influent pipe of the Allegheny water works. The aspect of affairs thus became so threatening that the Secretary requested Dr. Germer, the President of the Board, to proceed to Pittsburgh and confer with Dr. McClelland, of the Board, Mr. Hunter, the inspector and the local health authorities as to the best means to adopt to stamp out the infection. Much public interest was awakened in the matter. The daily press of Pittsburgh took up the question most energetically, one paper causing elaborate analysis to be made of the water, and seconding the Board in all its efforts. The full report has not yet been received.

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**VI. REPORT ON AN EPIDEMIC OF TYPHOID AND CONTINUED  
FEVER AT GLASGOW IRON WORKS, NEAR POTTSTOWN,  
MONTGOMERY COUNTY.**

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By BENJAMIN LEE, M. D., *Secretary*, AND WILLIAM B. ATKINSON, M. D.,  
*Medical Inspector*.

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In the month of August the Board found it necessary to investigate an alarming outbreak of fever among the employés of the Glasgow Iron Company and their families near Pottstown, Montgomery county. This place was visited by the Secretary, accompanied by the inspector of the Delaware district, Prof. William B. Atkinson, Thursday, July 29. This company employs about one hundred and thirty-five hands, and nearly half of them were then reported as on the sick list. Besides these, members of the families of those residing quite near the works were also ill. Twelve of them were seen in various stages of a low fever which is thus well described by Dr. H. Y. Nieman, of Pottstown, in summing up his report of sixteen cases under his care: All these cases had typhoid symptoms, and, with few exceptions, diarrhoea. One had hemorrhage from the bowels. All commenced in the same way, with chills, pain in the back and limbs very severe, at times fearful pain over the entire cranial region, loss of appetite, delirium, dry and coated tongue, nausea and often vomiting, pulse hard and full, generally averaging from 80 to 90, except in those of true typhoid fever, where it ran considerably higher.

All of these cases are convalescent; some of them got well in six

or eight days. Manifestly then they were not all typhoid; but some, as Inspector Atkinson satisfied himself in a later visit, were certainly so. This being the case, the same circular of instructions was issued to the physicians, as in the case of the West Elizabeth epidemic. In their efforts to improve the sanitary conditions of the homes of the employes the Board was ably and cheerfully seconded by the officers of the company, who spare neither trouble nor expense to carry out its recommendations. The source of this outbreak was unquestionably a well in the company's yard, on which, in consequence of its supposed superior purity, all the neighborhood depended for its drinking water. The following is the analysis of the three water supplies used by those who were apparently exposed alike to the infection. It was made by Messrs. Salom and Westesson, of Philadelphia, and is expressed in *milligrammes per litre*.

	AMMONIA.	
	Free.	Albuminoid.
No. 1. The abandoned spring, . . . . .	.114	.32
No. 2. The spring-house well, . . . . .	.014	.28
No. 3. The reservoir, . . . . .	.026	.26

The fact was clearly demonstrated that all of those who were seized with the epidemic had drunk of the water from the pump in the yard, marked above the "abandoned spring," while none of those who had used the water from the other two sources exclusively were attacked. The well has been pumped dry under the direction of the Board, and no decomposed matter was found in it.

As to the source of the pollution, Dr. Thomas J. B. Rhoads, of Pottstown, says: "Persons acquainted with the topography of the new red sandstone—the so-called red slate or red shale district—know that the soil in many places is very shallow, notably so along the Manatawny, in the vicinity of Glasgow. In many places the laminated rocks are denuded of soil; in other places barely covered. Any impurities accumulating in such localities will find their way through the fissures of the rocks into the adjacent wells and springs in an imperfectly filtered condition in wet seasons like the spring and summer of this year. In like manner and under similar conditions the fluid contents of deep cesspools will find their way into the same outlets. The copious and frequent rainfalls carried the impurities of the surface through the thin layer of soil into the fissures of the shale, and thence into and out of the nearest vents. In deep soils, with clay subsoil, percolation proceeds more slowly, and consequently filtration and purification are more complete. In dry seasons percolation is carried

on more slowly, and consequently filtration is more complete in any soil under such conditions. In deep soils larger quantities of water are held in suspension, and in those regions we have the never-failing springs of pure water. In shallow soils the water held in suspension is soon drained off, and then we have the dry wells in seasons of little rainfall.

"The shallow soil of the Glasgow region, underlaid by the laminated red shale, permitted the surface impurities, by rapid filtration during the rainy season, to enter the crevices and fissures in an imperfectly filtered condition and contaminated the adjacent wells and springs, invisible it may be to the eye, not detectable by chemical analysis, nor by the special senses of taste and smell, yet potent enough to produce all the sufferings and misery in so many households.

"And again, persons who have any experience in making excavations in the vicinity of cesspools, particularly where such extend into the bed rock, are aware that the fissures of rock are filled with excrementitious matter in minute particles as made apparent to the olfactories. It needs but a continuous and copious rainfall to reach these fissures and crevices in the rock through percolation, and all matter thus filtering through this matter to the water level will necessarily convey more or less of this substance with it, either in solution or admixture, and thus contaminate the water."

The remarkable fact with regard to this well, however, is its complete isolation, the great distance at which it lies from any cesspool or other source of contamination, while springs much nearer to such infecting objects were drunk from with impunity. The immediate neighborhood of the well was, however, not protected from contamination as the water supply of so large a population should have been. A deposit of human feces was observed lying on the ground not ten feet from it, and in such a position that in a drenching rain portions might possibly have been washed into it. Such a spring should be surrounded by a carefully fenced-in area of a hundred feet in diameter, and no one should be allowed to enter the enclosure for any other purpose than to draw water.

The following is Dr. Atkinson's report :

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board of Health :*

DEAR SIR : In response to your instructions, I visited, on the 6th inst., the scene of the epidemic at Glasgow. Mr. Shoemaker, the president of the iron company, courteously escorted me to the houses of a number of those who had been, or were still sick. We were accompanied by Doctors Todd and Ashenfelter, and Doctors Eck and Monger met me, and aided me by information on many points. After a very careful examination of the several cases that were submitted to my inspection I found in all save two, a marked absence of the special symp-

toms of enteric fever. One of these, a man named Ziegler was in a typhoid condition, with great accumulation of sordes on the tongue, teeth, &c., low fluttering pulse, subsultus. and every appearance of dying in a short time. He had however, no petechiae, no iliac tenderness, very slight tympanitis. I could not pronounce this case one of enteric fever.

The other, located in Pottstown, a man named Fitzgerald, about twenty-five years of age. This had so many of the special symptoms of typhoid fever that I agreed with Dr. Ashenfelter the attendant, that this was a sporadic case of that disease.

The cases seemed to start with great languor, aching of bones, severe headache, greater or less delirium from the outset, soreness along the line of the œsophagus, generally diarrhœa, occasionally slight epistaxis, and a peculiar pain at the edge of the floating ribs of the left side; by several of the physicians, this was regarded as irritability of the spleen. The temperature in a number of cases was about  $104^{\circ}+$ . This seemed to be the average noticed by several of the physicians. Convalescence usually was established at the end of six to twelve days, but I saw quite a number of cases where the patients were walking about at the end of a week from the inception of the attack, apparently free from disease, although they invariably complained of being extremely weak, and gave the appearance of having been quite ill for weeks rather than days.

After a most thorough scrutiny, I was unable to find any cause for this outbreak other than the spring near the iron works. The epidemic at once began to abate on the closing of the pump of this well. After a careful cleansing, nothing was found to show any cause for this remarkable action of the water of this spring, which had long been celebrated for its purity, and hence the large number of people in addition to the workmen who used it as a beverage. Unfortunately, no proper examination of this water has yet been made, nor any experiments instituted to test its effects on inferior animals.

I urged upon all, both physicians and nurses, the free use of disinfectants, in the houses, &c., the excreta to be disinfected with great care and buried in fresh earth.

In no case, were the cesspools to be used indiscriminately by the sick and the well.

Mr. Shoemaker and the medical gentlemen readily agreed to see that my recommendations were complied with in all cases where there had been any laxity in this respect.

I have since been informed that the cases were all improving, and also that the case of the man Ziegler who was in such a critical condition has since begun to convalesce.

Respectfully submitted.

WM. B. ATKINSON, M. D.,  
*Medical Inspector.*

[The following brief notes of cases treated by Dr. Nieman sufficiently indicate the hybrid character of the fever in some instances while in other the true typhoid type is unmistakable.—B. L.]

**Notes of Cases of the Epidemic Among the Men Employed at the Glasgow Iron Works, Montgomery County, Pa.**

*Case 1.* W. R., age, 35 years. Was taken ill on July 18, 1886, with severe pain in limbs, head and back, loss of appetite, sick stomach and vomiting. No diarrhoea. Pain in head worse in the afternoon. Fever of a remittent type and a general typhoid condition. Did not have medical attendance until July 22, 1886, when I was called to see him at 11 p. m. Found the patient delirious, pulse hard and full, running up to 105 per minute, tongue very dry, harsh and coated. Prescribed brandy in tablespoonful doses every three hours. Quinine grs. V. and Nit. Muriat. Acid Dil. gtt. XV. every three (3) hours. I prescribed 30 grs. of Bromid. of Potass. for the severe pain in head. Also ordered plenty of sweet milk (iced), beef tea, pigeon broth, etc. Continued this treatment for four or five days, when the pain in the head and delirium left him; I then stopped the Bromide potassium and gave in place of it the following: Tinct. Cinchon. Co. fʒij and Liq. Potass. Acetat. fʒij, one teaspoonful every three hours. Has had very little diarrhoea and is improving. Made very few changes in treatment since.

*Case 2.* H. S., age, 23. Taken ill on July 25, 1886, with typhoid fever with a remittent type. Treatment pursued; prescribed Quinine and Dil. Nit. Muriatic Acid and spts. turpentine for tympanitis. Also brandy, milk, beef tea, etc. Controlled the diarrhoea with gallic acid, bismuth and opium in small doses. Was ill about 12 days. Is convalescent.

*Case 3.* W. S., age, 21. Taken ill July 21, 1886, with remittent type of fever and typhoid symptoms. Treatment, Quinine and Dil. Nit. Muriat. Acid, besides Tinct. gent. co., Liq. Potass. Acetat. and Tinct. Opii Co., and a nourishing diet. Was ill about 8 days. Is convalescent.

*Case 4.* W. E., age, 33. Taken ill July 27, 1886, with a remittent type of fever, with typhoid symptoms, etc. Treatment, Quinine and Dil. Nit. Muriatic Acid, alternated with Bromide of Potass grs. x every 3 hours. A nourishing diet was ordered. Was ill about 9 days. Convalescent.

*Case 5.* N. M., age, 30 years. Taken ill July 20, 1886, with remittent fever and typhoid symptoms. Treatment, Quinine and Dilut. Nit. Muriatic Acid, alternated with Potass. bromide grs. x and Fld. Ext. Guarana gtt. xx every three hours. Was ill 10 days. Convalescent.

*Case 6.* J. E., age 25 years. Taken ill July 23, 1886, with a remittent type of fever and typhoid symptoms, developing into true typhoid fever. Had hemorrhage from the bowels with diarrhoea. Treat-

ment, Quinine and Dil. Nit. Muriatic Acid, alternated with Bromide Potass. and Fld. Ext. Guarana. Controlled hemorrhage with large doses of opium and gallic acid and Sub. Nit. Bismuth. Is now improving.

*Case 7.* W. L., age, 19. Taken ill July 21, 1886, with remittent fever and typhoid fully developed. Had a severe diarrhœa and vomiting. Prescribed Quinine and Aromatic Sulph. Acid every 3 hours, and for diarrhœa Gallic acid, bismuth and aromatic powder. Besides ice bags to head, and brandy, beef tea, pigeon broth and milk were ordered. Has been ill two weeks. Is now improving.

*Case 8.* F. E., age, 40. Taken ill July 25, 1886, with remittent fever and typhoid symptoms. Treatment, Quinine, Dil. Nit. Muriatic Acid. For diarrhœa Tannin and Bismuth was prescribed. Had been ill 10 days. Convalescent.

*Case 9.* C. M., age, 23 years. Taken ill July 20, 1886, with a type of remittent fever and typhoid symptoms. Treatment, Quinine and mineral acids. Was ill 10 days. Convalescent.

*Case 10.* H. S., age, 27 years. Taken ill July 20, 1886, with remittent fever. No diarrhœa. Treatment, Quinine and mineral acids in alternation with Potass. Bromide and Fld. Ext. Guarana. Was ill two weeks. Convalescent.

*Case 11.* D. L., age, 19. Taken ill July 23, 1886, with a remittent type of fever. Prescribed Quinine with Dilute Nit. Muriatic Acid and Potass. Bromide. Was ill seven days. Convalescent.

*Case 12.* J. W., age, 20. Taken ill July 24, 1886, with a remittent type of fever. Treatment, Quinine, Aromat. Sulph. Acid with Tr. Cinchon. Co. and Sub-nit. Bismuth with Opium in small doses and Gallic Acid to control diarrhœa. Was ill ten days. Convalescent.

*Case 13.* D. S., age, 19. Taken ill July 22, 1886, with a remittent type of fever and typhoid symptoms. Treatment, Quinine and Aromat. Sulph. Acid, alternated Elixir beef, wine and Iron every 4 hours. Was ill twelve days. Convalescent.

*Case 14.* W. A., age, 30 years. Taken ill July 22, 1886, with remittent fever and typhoid symptoms. Treatment, Quinine with Nit. Muriat. Acid Dil. and bromide Potass, and finally Elixir beef, wine and iron. Had been ill fifteen days. Convalescent.

*Case 15.* C. E., age, 35. Taken ill with fully developed typhoid fever July 21, 1886. Treatment, Quinine and Dil. Nit. Muriat. Acid, alternated with bromide Potass. and Fld. Ext. Guarana. Stopped the Bromide mixture when diarrhœa set in and prescribed Sub. Nit. Bismuth, tannin and aromatic powder. Was ill 16 days. Convalescent.

*Case 16.* O. E., age, 70 years. Taken ill August 1, 1886, with a remittent type of fever and fully developed typhoid symptoms. Treatment, Quinine with nit. muriatic acid dil. and Bismuth, Gallic acid and aromatic powder to control diarrhœa. Also beef tea, milk, etc. Has been ill six days. Is now improving.



**Remarks.**

All of these cases had typhoid symptoms and nearly all, with few exceptions, diarrhœa. One had hemorrhage of the bowels. All of them commenced to get ill in the same way, with chills and chilly sensations, pain in back and limbs, very severe, at times fearful, pain over the entire cranial region, loss of appetite, delirium, loose bowels, dry and coated tongue, nausea and often vomiting, pulse hard and full, generally averaging from 80 to 90 beats per minute, except in those of true typhoid fever when it ran up considerably higher. These cases are now nearly all discharged, with several exceptions who are improving, as you will see by consulting notes as given. There were several other cases of a lighter nature of the same disease, who rapidly regained their former health under treatment. All of them were kept on a supporting diet. I have tried to give you a true synopsis of these cases, treatment, etc., in the best manner possible, under the circumstances, as a full report would be a very tedious job to perform without considerable labor, which I have not the time to do at present. Hoping that this will prove satisfactory,

I remain,

Yours very respectfully,

H. Y. NIEMAN.

POTTSTOWN, August 6, 1886.

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**VII. REPORT ON AN ALLEGED CASE OF SMALL-POX AT MOGEESTOWN.**

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PHILADELPHIA, March 8, 1886.

Dr. BENJAMIN LEE,

*Secretary and Executive Officer State Board of Health :*

DEAR SIR : In response to your order received March 6, I proceeded to-day to Mogee's station. On my arrival, I had no difficulty in finding the patient. Several small frame buildings are located close to the station. In one of these was the only sick person of the town, an Italian, who had been suffering with a light attack of lung trouble. He had for one day, an evanescent eruption on the face, which disappeared inside of that day. There was not the slightest symptom of small-pox. Yesterday the patient was out walking, and was only confined to the house to-day by reason of the inclement weather.

Very respectfully,

WM. B. ATKINSON,

*Medical Inspector.*

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APPENDIX D.

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REPORTS OF INSPECTIONS.

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1. Report of an inspection of the Soldiers' Orphan School at McAllisterville—Benjamin Lee, M. D., Secretary.
2. Report of an inspection of the Soldiers' Orphan School at Mercer—Benjamin Lee, M. D., Secretary.
3. Report of an inspection of the Orphan Home at Butler—Benjamin Lee, M. D., Secretary.
4. Report of an inspection of the Soldiers' Orphan School at Jumonville—Benjamin Lee, M. D., Secretary.
5. Report of an inspection of the Soldiers' Orphan School at Dayton—Benjamin Lee, M. D., Secretary.
6. Report of an inspection of the Soldiers' Orphan Institute at the Northern Home for Children, Philadelphia—William B. Atkinson, M. D., Medical Inspector.
7. Report of an inspection of the County Jail at Carlisle—R. Lowry Sibbet, M. D., Secretary.
8. Reports of inspections of Vaccine Farms and Propagating Establishments—Ed. Wm. Germer, M. D., President, and Benjamin Lee, M. D., Secretary.
9. Report of an inspection of the State Reform School at Morganza—Benjamin Lee, M. D., Secretary, R. Lowry Sibbet, M. D., Medical Inspector.
10. Report of an inspection of the Bedford County Almshouse—R. Lowry Sibbet, M. D., Medical Inspector.
11. Report of an inspection of the Lakeside House, Eaglesmere, Lycoming county—E. D. Payne, M. D., Medical Inspector.
12. Report of an inspection of a tannery at Monroeton, suspected of polluting Towanda creek—E. D. Payne, M. D., Medical Inspector.
13. Report of an inspection of the Monongahela river and works polluting the same at Braddock, Allegheny county—L. H. Hunter, Inspector, Benjamin Lee, M. D., Secretary.
14. Report of an inspection at Limerick—William B. Atkinson, M. D.
15. Report of an inspection at Rosemont—William B. Atkinson, M. D.
16. Report of an inspection of the Schuylkill river at West Manayunk—William B. Atkinson, M. D.
17. Report of an inspection at Eagle, Chester county—William B. Atkinson, M. D.
18. Report on slaughter house at Hulmeville—William B. Atkinson, M. D.
19. Report of an inspection at West Newton, Westmoreland county—L. H. Hunter, Inspector, Allegheny District.
20. Report of an inspection at Mt. Oliver, Allegheny county—L. H. Hunter, Inspector.
21. Report of an inspection at New Castle, Allegheny county—L. H. Hunter, Inspector.
22. Report of an inspection at Homestead, Allegheny county—L. H. Hunter, Inspector.
23. Report of an inspection of the Jenkintown school house—William B. Atkinson, M. D., Inspector.
24. Report of defective drainage at Fernwood, Delaware county—William B. Atkinson, M. D., Inspector.

I. REPORT OF AN INSPECTION OF THE SOLDIERS' ORPHAN  
SCHOOL AT McALLISTERVILLE.

BENJAMIN LEE, M. D., *Secretary.*

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
HARRISBURG, *March 12, 1886.*

To His Excellency ROBERT E. PATTISON,

*Governor of Pennsylvania :*

SIR: I have the honor to present the following report of a sanitary inspection of the Soldiers' Orphan School at McAllisterville made this day in accordance with your instructions:

The investigation covered a period of five and a quarter hours, from 9 A. M. to 2½ P. M., and embraced the following subjects, viz: The general health of the school and nature of the diseases most prevalent; the location and construction of the buildings; the capacity and ventilation of the dormitories; the capacity, ventilation and lighting of the school rooms; the condition and character of the bedding; the condition, character and amount of bed clothing; the condition, character and amount of body clothing; the quality and quantity of the food supply; the number of hours devoted to study, sleep and exercise; the character and quantity of the water supply; the mode of drainage, and the condition and location of the privies.

1. GENERAL HEALTH OF THE SCHOOL.

My first interview was with Dr. J. Clayton Weidman, a graduate in medicine of the Jefferson Medical College of Philadelphia, who has been for three years the physician of the school. He reported that there had been comparatively little sickness among the children, and that the standard of health is steadily rising. The most serious outbreaks of disease which have occurred since he has been connected with the institution have been introduced from outside. Two years ago last September, three children, all belonging to one family, named Harmer, returning from their summer vacation, brought typhoid fever with them from their home. One of them died. The disease did not spread to any other of the pupils.

Last September one of the children came back with measles. This spread rapidly, until forty cases had occurred. No death took place, nor were there any serious results following. At the same time one of the girls, named Katy Larson, returned from her home, where typhoid was prevailing. It soon developed in her, and about ten or twelve days later three or four pupils were taken down almost simultaneously. In all, sixteen were attacked, and one case terminated fatally. I shall refer to these cases subsequently, in connec-

tion with the subject of the water supply. Itch, which was quite common at the commencement of Dr. Weidman's attendance, is now never seen. Ophthalmia, which always occurs in the spring, is much less prevalent than formerly. There are now seven cases in all, but three of them depend upon constitutional causes. There is but one patient confined to the bed at present, out of a total of two hundred and thirty three (233) pupils and two hundred and forty-six (246) inmates. That is the case of a little girl convalescing from pneumonia. Whatever the physician desires for the sick, in the way of medicine, wine or diet, is at once freely provided.

## 2. LOCATION AND CONSTRUCTION OF THE BUILDINGS.

The school buildings are two in number, built of brick, standing on opposite sides of, and a few yards back from, a public road in the village of McAllisterville, and having a farm of about twenty acres attached. The soil on which they stand is a loose, readily-leaching clay, and the situation is sufficiently high to ensure drainage. One of the buildings is about forty years old, having been erected for the purposes of a private academy; the other is eighteen years old, and was built for the object to which it is devoted. The boards in the floor of the former are many of them in bad condition, and need replacing. Both buildings are much infested with rats in the lower stories.

I was courteously received by Mr. J. H. Sherwood, the superintendent, and proceeded to inspect the new building in company with him, Dr. Weidman and Mr. Sweigert, a student of medicine, who accompanied me from Mifflin. The floor of the basement of this building is about two and a half feet below the level of the ground. The rooms appeared to be dry and fairly well ventilated. The first room which I examined was the laundry, in which half a dozen boys were using washing machines and wringers. The wash water from this room is thrown into a tight, open barrel, from which a small iron pipe conveys it to a covered wooden drain, terminating in the gutter of the public road, a little way below the entrance gate of the school grounds. I shall revert to this drain in connection with the question of the water supply. On this floor is the girls' lavatory and the girls' play room: the play room is also used for the bath room, the room which was formerly used for that purpose having been inconveniently small. This room is not well adapted for the purpose of a play room as it is not sufficiently well lighted, and is too small. What I have said as to the general construction of this building will apply to the older building, which is much on the same plan, with a basement, except that the halls and stairways in the latter are narrower and less regular. The floors and walls appeared to be clean.

### 3. CAPACITY AND VENTILATION OF THE DORMITORIES.

The first dormitory examined was that of the younger girls, averaging from six to twelve years. The floor space of this room was  $29 \times 36$  feet, and the height of ceiling 11 feet. The cubic capacity was therefore 11,484 cubic feet. There were twenty beds in it, in which fifty-one children sleep. In more than half of the beds, therefore, there are three children. Most of the beds are what is called three-quarter, not full-sized double beds. The bedding accommodation is therefore decidedly insufficient. There may be no serious objection to very little children sleeping two in a bed, but three, in a bed of very moderate width, should certainly not be permitted. In regard to air space, it will be noticed that the number of cubic feet for each child was, in round numbers, 230 feet. All sanitarians agree that 600 feet is the least allowance that a strict regard for health will tolerate, and that for growing children 900 is better. This is of course liable to some modification from the opportunities for ventilation which are here good, there being windows on three sides of the room, and many of them, of which a very judicious use is made. The second girls' dormitory was found on the floor above (the second above the basement in the new building). Its capacity was a little less than that of the room below, the floor area being the same, but the height of the ceiling one foot less; it was therefore  $29 \times 36 \times 10$  feet, or 10,440 cubic feet. The larger girls principally sleep here, averaging from twelve to sixteen years. There are twenty-one beds and forty-two occupants. The number of cubic feet to each sleeper is hence somewhat greater than in the first room, or about 250 cubic feet, still not half of lowest allowance of hygienists. In the corresponding room on the third floor, in a space from which a room  $18 \times 18$  feet has been deducted by partitioning, are twenty-four beds, occupied by fifty of the smaller boys, while the little room is also crowded to its utmost capacity. Here we have a reduction of the number of cubic feet to about 180 per head. In the attic of this building, however, was a little dormitory, beside which the air provision of those already visited was sumptuous. This was a long, narrow room, with a window in one end, and the ceiling sloping on both sides to the wall, which was only three and a half feet high. The dimensions of this apartment were  $27 \times 11 \times$  (estimated)  $5\frac{1}{2}$ . This would give a cubic capacity of  $1,633\frac{1}{2}$  cubic feet, which is shared by eighteen little unfortunates, who suffer from nocturnal incontinence of urine, all boys. Their supply of air is but 90 cubic feet each, while their circumstances are such as naturally call for a large increase rather than a diminution of the customary allowance. Here, as in the other dormitories, the salvation of the children has evidently been the free introduction of external air, partly through a broken window. Indeed, only the most incessant and judicious attention to window ventilation (and there is no other) on the part of the matron and the

male attendant, could have maintained the present good standard of health in the institution in the face of such adverse conditions. The dormitories of the larger boys are in the other building. One of these is a large room, which has been partitioned off from the principal school room. The others are the original dormitories of the old academy, small rooms, with one window in the end, containing four beds, each with two occupants. These rooms were probably intended, when the school was a private one, for two boys each. By removing all the doors, however, they are made to share the air space of the hall, on each side of which they are arranged, and which is ventilated by windows. There is no heat in any of the dormitories. From the facts and figures presented, it will be seen that the sleeping accommodations of the school are, to be very moderate in my estimate, scarcely one-third what they should be in extent. Only wooden buckets are provided for the relief of nocturnal necessities.

The infirmary is situated in the new building. Five rooms, including that reserved for the proprietor when he visits the establishment, are available for this purpose. But two are now in use. In one were six patients, three of them cases of inflammation of the eye, one of swelling of the glands of the neck from constitutional causes, one of sprained ankle, and one of hip disease. In the other was the convalescent from pneumonia, with her mother as nurse. Proper precautions appear to be scrupulously taken by the assistant matron or nurse to prevent contamination of the air of the infirmary and sick room; the excreta being removed at once, and, in the case of infectious diseases, disinfected and buried. The two deaths from typhoid fever already alluded to are the only ones which have occurred since Dr. Weidman has been in attendance. The sewing room, which is in the new building, and in which all the clothes for the girls are made by the pupils, under the superintendence of a seamstress, I found to be close and ill-ventilated, and decidedly too small for the number of persons occupying it.

#### 4. CAPACITY, VENTILATION AND LIGHTING OF THE SCHOOL ROOMS.

The primary school, Miss McClune teacher, is situated on the first floor of the old building (above the basement). The largest number of children in it at any one time is forty-two. Its dimensions are  $21 \times 24$  feet of floor space with a ceiling 11 feet high. The number of cubic feet of air contained is 5,544. Each child therefore has 132 cubic feet of air, instead of 600 which should be allowed it, without taking into account the fact that the large stove and the school furniture still further diminish the air space. The stove is placed in the center of the room, which is so crowded that some of the desks and seats almost touch it. The children appear to have stood the impure air of this room better than their teacher, probably because they are exposed to it for a much shorter period of time daily. The lighting of this room

is all from one side, and the children are placed with their backs to the windows. so that they are always "in their own light," and are obliged to twist themselves around into very faulty attitudes in order to see, especially when working on their slates.

The principal school room, in the second-story of the old building, has a floor space of forty-two feet square, and a ceiling eleven feet high. This gives us a capacity of 19,404 cubic feet. The largest number of pupils in this room at once, except during the chapel exercises, when the entire school is assembled there, is one hundred and twenty. Adding to this number the three teachers, we have for each individual an allowance of somewhat less than 160 cubic feet of air. This room is quite well lighted by good-sized windows on both sides, nine in number. These windows are too low, however, to give the best results for the pupils' eyes. Opening off from the main school room are two recitation rooms. The floor area of one of these apartments is  $11\frac{1}{2} \times 12$  feet, with height of ceiling 11 feet. This gives us 1,518 cubic feet of air, which, divided among the principal and twenty-three pupils, the largest class which occupies it, furnishes each individual the pitiful pittance of  $63\frac{1}{2}$  cubic feet, about one-tenth the requisite amount. The seats in both these recitation rooms are simple benches against the wall. Hence, limited as was the capacity of the attic dormitory, we find it even surpassed by this recitation room in the poverty of its air supply. As the door of this room must be kept closed during recitations, it can be surmised what a condition its atmosphere must be in at the end of a recitation. The other recitation room has a floor space rather more than twice as large as the first.

#### 5. CONDITION AND CHARACTER OF THE BEDDING.

The beds were all straw sacks, thick and well-filled; the ticking generally clean and in good condition. The beds, some of wood and some of iron, all with slats. In the attic ward already alluded to the condition of some of the beds was insanitary and offensive.

#### 6. CONDITION, CHARACTER AND AMOUNT OF BED CLOTHING.

Each bed was provided with two sheets, the newer and heavier one being the upper. There were bolster with bolster cases to all the beds, and pillows with pillow cases to many. The usual allowance of covering was five blankets and one comfortable. In some instances two blankets took the place of the comfortable, making seven thicknesses of blanket. Some of the blankets were very thin and old, others new and of good weight and texture. When all the blankets on any one bed were very thin there was an extra allowance of one or two. In addition to this there was a thin, white coverlet on each bed. The thickness of the bed clothes appeared to me quite sufficient; the question in my mind was whether they were sufficiently wide to cover

three children, unless the latter were excessively small. There was no close or musty odor—what is known as the poorhouse smell—about the bedding or bed clothing, or, indeed, anywhere in the dormitories. This I attributed to the very free introduction of fresh air during the daytime in all rooms not immediately in occupation.

#### 7. THE CONDITION, CHARACTER AND AMOUNT OF BODY CLOTHING.

*Girls.*—Miss McKillips, the matron, informed me that the girls' winter suit consisted of socks, woolen in winter and cotton in summer; unbleached muslin underwear, a muslin skirt, a woolen skirt, a woolen dress and an apron, with a coat or shawl for out-door wear. Six pair of socks and three pair of shoes are allowed in the course of the year. No night-gowns are provided, all but the few whose parents had furnished them, wearing their day underclothing at night. As the underclothing and sheets are often not washed oftener than once in two weeks in winter this must be regarded as a very unhealthy practice, and both boys and girls should be furnished with this essential article of clothing and compelled to wear it. The evil is still further aggravated by the fact that there are no pegs or racks on which to hang the day clothing when it is removed, and it is, therefore, often stuffed under the bed clothes or bolster and thus deprived of its night's airing.

*Boys.*—Lieutenant George Allen, fourteen years of age, and a pupil of six years' standing, I found in charge of the boys' clothing room. A full suit of boy's clothing, which he took down for my inspection, consisted of a heavy blue flannel shirt, lined throughout the body with heavy muslin, a pair of light blue army cloth pantaloons, lined throughout with unbleached muslin, a pair of heavy woolen socks (those that I examined had been carefully darned), a pair of heavy calf skin lace shoes and a dark blue cloth jacket. I saw few of the boys with their elbows out, some of the very little boys with patches on their knees, nearly all in full uniform, and generally neat in appearance. Their shoes, which I examined carefully, appeared to be of good leather and workmanship, and were in good condition. The lieutenant, with whom I had some private conversation, told me that the flannel shirts were washed once in two weeks in winter. He had himself not suffered from cold or insufficiency of clothing, and had no illness during his six years' life in the school. Each boy, he said, who wore his hair long, was furnished with a dressing comb. A fine tooth comb was provided for each squad of about eight small boys whose heads are cropped close, and the large boys were detailed to use it for them. I should say that, on the whole, the clothing supply of the boys was adequate for warmth and in sufficiently good condition to preserve self respect. For the sake of cleanliness, however, the boys should be provided with drawers, as the pantaloons are rarely



washed. The flannel or worsted material of which the girls' dresses are made, appeared to me to be light, thin, open and flimsy. They should at least have heavy-woven undervests to make their clothing approach that of the boys in warmth.

#### 7. QUALITY AND QUANTITY OF FOOD SUPPLY.

Mr. William D. Smiley, male attendant, for several years a teacher in the school, himself a soldier's orphan, and educated in a soldiers' orphan school, informed me that they baked one hundred and thirty loaves of bread a day. These loaves, which I examined, were very large, I should say about a foot square and six inches thick, and of good weight. This would allow somewhat more than half a loaf per diem to each inmate. The flour is obtained from a mill in the neighborhood. I ate the bread at dinner and found it light, sweet and palatable. Store room being very insufficient, large quantities of food are not kept on hand. Mr. Smiley's bills showed that 1,800 pounds of flour had been purchased in four days. Two cows are kept, and from three to four gallons of milk a day purchased from neighboring farmers.

From the cook, I learned that the meals were about as follows :

Breakfast : Coffee with milk and sugar (if desired, but usually not called for), bread and butter, hominy with molasses, daily, varied frequently by the addition of baked beans or gravy or hash.

The dinner, of which I partook in common with the scholars and attendants, consisted of mutton stew, boiled dumplings, boiled rice sweetened, bread and coffee. The butter which was given to me was of good flavor. I afterwards examined about sixty pounds of it in the pantry, put up in rolls averaging five pounds and said to have been got from neighboring dairies. It was of good uniform color and texture, and without rancid or other unpleasant odor, but it is of course impossible to say in these days of oleomargarine, how pure it was, without a careful chemical examination.

For supper, the bill of fare is tea with milk and plenty of sugar, "for" the cook said, "they like their tea very sweet," bread and butter, stewed or canned fruit. I examined the sugar in the barrel. It was of two grades; white granulated and light yellow; both seemed clean and pure. Mr. Smiley stated that about three hundred and fifty pounds of beef and from eighty to one hundred pounds of mutton were purchased per week. Pork was raised on the place, eaten fresh and made into sausage, etc., and could not well be estimated. Fresh vegetables were served every other day. The cellar being very small, the potatoes and cabbages raised on the farm were kept buried in the fields. Other fresh vegetables were bought of the farmers near by as needed. The children were allowed about twenty-five minutes for dinner. A certain portion was served to each at first, and "asking for more" did not appear to be a criminal offense or to excite astonish-

ment. The behaviour of the scholars at table and indeed wherever I met them was decorous and respectful. The dining room is in the basement of the old building. The ceiling is low, and the room much too crowded, but, as the time spent in it is brief, there is no opportunity for very serious vitiation of the atmosphere. Opening off from the dining room is the only cellar of the establishment. This is paved with cement worn into holes, but seems dry. It was pervaded by an extremely unpleasant odor which could hardly be accounted for by a barrel of sour kraut, which with a bushel of potatoes and the bread on a hanging shelf were all the provisions it contained. There were several large vegetable bins in it raised a few inches from the floor. I advised that they should all be torn out and careful examination made to see if there were decaying vegetables under them, and that, until the foulness was remedied, the bread should be kept elsewhere.

My conclusion in regard to the food supply is that, so far as my observation went, it is sufficient in quantity and of good quality, though not perhaps sufficiently varied. This view is sustained by the generally healthy appearance of the children, who are of average weight and good color, and by the absence of diarrheal and dyspeptic affections among them. I would suggest, however, the entire disuse of tea and coffee for all the children under twelve years of age and the substitution of pure milk, and an increase in the quantity of milk supplied to all the children.

#### 8. NUMBER OF HOURS DEVOTED TO STUDY, SLEEP AND EXERCISE.

Mr. Smiley informed me that the schools were in session from 7.45 A. M. to 5 P. M., with an interval of about an hour for dinner. The older children are in school six hours each, two at one time and four at another. They are divided into details for work as follows: For the wash house, the wood pile, the kitchen, the dining hall, scrubbing, sewing and the bake room, spending two hours a day at work. Drilling of the boys is carried on only when the frost is out of the ground so that it can be done in the open air. One hour a day is then devoted to it, and sometimes two.

The children are all in bed by 8.15 and rise at 5.30, giving them nine hours sleep. It is desirable that there should be a hall sufficiently large to enable the drill to be carried on through the winter. This would give the boys a commodious play room, which they greatly need.

#### 9. THE CHARACTER AND QUANTITY OF WATER SUPPLY.

The water is supplied by two pumps, one connected with each building, and two cisterns, which take water from the roofs. The privies are too far removed to run any risk of contaminating them. But the drainage from the laundry already spoken of passes out through an iron pipe close to one of the pumps and it is possible that this water

may soak into the ground where the pipe communicates with the wooden drain, and so find its way into the well. In this way alone can the fact of the spread of typhoid fever in the school last autumn be accounted for.

The physician and nurse assured me that the discharges from the patient were disinfected and then carried to a distant part of the grounds and buried, not thrown into the privy receptacles. The three cases which ran their full course in the institution previously did not communicate the disease to a single other scholar. But from this last case it spread with great rapidity and virulence. If we suppose that the clothing and bed clothing of this child were washed in the laundry and the water thus contaminated was thrown into the drain, we can understand that this pump might have become infected and thus have constituted a new focus of disease.

NOTE.—In order to arrive at a definite conclusion in regard to the character of this water I instructed the principal, Mr. Sherwood, to send a demijohn of it to Dr. G. G. Groff, of Lewisburg, Medical Inspector to the Board, for analysis, and wrote to the latter instructing him to communicate the result of his investigation to me, but without giving him any hint of my suspicions or of the conditions of the well. The following is the report of his examination:

LEWISBURG, PA., *March 23, 1886.*

DR. BENJ. LEE, *Philadelphia, Pa.:*

DEAR SIR: I report the following result of analysis of well water submitted to me from McAllisterville, Pa.

Respectfully,

G. G. GROFF.

**Examination of Water from McAllisterville, Juniata county, for State Board of Health, March 23, 1886.**

#### PHYSICAL EXAMINATION.

*Appearance.*—Clear, but with numerous flocculent particles.

*Taste.*—Tasteless.

*Odor.*—Slight and peculiar when heated.

*Deposit.*—Slight and dust-like.

#### MICROSCOPIC EXAMINATION.

The deposit seemed mostly of particles of vegetable matter, some earthy matter, some which was amorphous and I could not determine, and one minute, round worm.

#### CHEMICAL EXAMINATION.

*Total Solids.*—22.4 grs. to gallon.

*Chlorides.*—Less than 1 gr. to gallon.

*Nitrites*—Slight traces.

*Nitrates.*—Slight traces.

*Organic Matter*.—Traces, probably vegetable.

*Ammonia*.—Traces.

From the above examination I think the well should be cleaned, but I do not believe the water is dangerously contaminated. I did not proceed to a determination of the amount of ammonia, by Nesslerizing, for I did not know that you cared to have it done, and it is the most expensive part of water analysis. If you wish it done, please notify me and I will do it at once, though I think the examination made shows that the water is not dangerous. From some surface indications, it may be in danger of being contaminated; if so, surface cleanliness should be insisted upon.

Respectfully,

GEO. G. GROFF.

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It will be observed that these are just about the results which might be anticipated from such a source of contamination as has been suggested—"indications of surface contamination, not rendering the water dangerous at the present time, but liable to become so, if at any time the laundry wash water is itself contaminated." I have instructed Mr. Sherwood to have this drain made water-tight, either with cast-iron or vitrified drain pipe, with water-tight joints, for a distance of at least one hundred feet from the pump.

The water of the other pump of which I drank was clear and of good flavor, and without unpleasant odor.

The amount of water supply appears to be sufficient for all purposes, but the arrangements for heating water are quite inadequate. Hence arises a difficulty in providing a sufficiency of hot water both for laundry and bathing purposes. In the winter neither bed nor body clothing can be washed oftener than once in two weeks. In addition to this, the only place for drying clothes in bad weather is the girls' play room, which is also a lavatory and bath room for the girls—a low-ceiling, dark room, partly under ground. Bathing once a week in warm water is insisted on, but the accommodations are entirely insufficient. Each of the older girls is allowed a bucket of water to herself, but the boys and the younger girls are obliged to make the same water do duty for several. The towels used are the long roller towels, each being used by a large number of scholars, and changed as often as the matron thinks it necessary. Children with sore eyes or cutaneous affections are provided with separate basins and towels, but the space of the lavatories is so confined that there must be great risk of contagion. Each girl has a tooth brush and comb. The boys have no tooth brushes.

#### 10. MODE OF DRAINAGE.

The laundry drain has already been described. The wash water

from the kitchen is emptied into an open drain, some distance from the house. This drain leads through the fields to a run on the other side, distributing itself over the ground. If kept reasonably clean through the hot weather, it need not be a source of annoyance or ill-health. The garbage is fed at once to the pigs.

#### 11. CONDITION AND LOCATION OF THE PRIVIES.

The girls' privy consists of a long wooden box, about two feet deep, sunk in the ground, the house being erected over it. It had been recently cleaned, but contained a good deal of water which had drained into it, reaching to within a foot of the top. The ditch behind it, which ran down into the field, was conveying only the drippings from the melting snow on the roof. The accommodations are decidedly insufficient for the number of pupils. The house is about a hundred feet in the rear of the building.

The boys' privy, constructed in the same way, but very dilapidated, was full to overflowing, and was emptying its superfluity into a ditch similar to that behind the girls', just described. As soon as the weather becomes warm it will necessarily be very offensive, and may give rise to sickness if not attended to. The house is situated about three hundred feet from the school building.

(NOTE.—I have since instructed the principal that all surface water should be carefully excluded from these boxes; that, at the end of each day, a layer of dry ashes should be thrown over the surface, and that they should be emptied and disinfected as often as they are filled nearly to the top. With these precautions they will be innocuous.)

Having recently visited the United States Industrial School for Indian Children, at Carlisle, and having been, on the whole, pleasantly impressed with its arrangements, I wrote to Capt. R. H. Pratt, the superintendent, proposing a series of inquiries in order to establish a basis of comparison. The following is the reply which he has very kindly and with great promptness forwarded:

U. S. INDIAN INDUSTRIAL SCHOOL,  
CARLISLE, PA., *March 23, 1886.*

Dr. BENJAMIN LEE,

*Secretary Board of Health, 313 S. 15th St., Philadelphia, Pa.:*

DEAR SIR: In reply to your letter of yesterday, I have to inform you that our dormitories are very irregular. For a part of the large boys we have rooms 45 by 24 feet, with 10 feet ceiling, in which we place sixteen. For other of the large boys and the small ones we have rooms 18 by 24 feet, with 10 feet ceiling, in which we place five. For the girls we have rooms of various sizes, 14 by 15 feet, 12 by 15 feet, with 10 feet ceiling. In the former we place five and in the latter four girls. In all of our boys' dormitory rooms we have the advantage of cross ventilation, and in the girls we have removed the transoms con-

necting with halls, or where there is no hall have removed the doors where the rooms connect, and there is a general circulation of air. You will see that 450 cubic feet is the smallest, while some of our students have over 800 cubic feet. We have no double beds; each student sleeps alone. For the girls I have the Hartford woven wire bed and for the boys the solid iron bed. Throughout the quarters the heating is by steam and direct radiation. The buildings are long and narrow and the rooms open to outside air by windows on both sides, so there is the best opportunity to ventilate. Our beds consist of husk mattress with hair top, and for winter we give three blankets with a comfort, or four blankets, three point, weighing four pounds; hair pillow, two sheets and pillow case; the latter changed weekly. The blankets and comforts are aired once or twice a week by hanging out on lines on balconies a half day. In addition, for the boys we have linen spreads. Chambers are provided in all the rooms. Each student is provided with a long night shirt, and required to remove all day clothing. The day clothing is hung up in the sleeping rooms, it not being possible to have it otherwise. Each student has separate towels, but three to four use the same basin, except in cases of disease, when the diseased student is provided with a separate basin, and usually removed from contact with other students. Each student has his own comb. Tooth brushes are only in partial use.

Our school building is 250 feet long by 24 wide, two stories, divided into five rooms of equal size on each floor. Each room is entered by an outside door from a balcony. On that side are two windows; on the opposite side there are four windows. The students sit with their backs to the greatest light. The ceilings are 10 feet high. As we work one half day and are at school one-half day, that is, half the students are at work in the morning and the other half are in school, and *vice versa* for the afternoon, there is an average of twenty-five pupils in each school room during the day time, which gives 460 cubic feet per pupil; but three nights in the week we have a study hour in the school rooms, where all pupils belonging to each room are present during that hour, and the air space is reduced to about 230 cubic feet; but the cross ventilation, aided by the very large old-fashioned fire places in each room, gives us good air. The heat is by steam and direct radiation. We use the Buffalo noiseless desks and seating, which is the most comfortable I know of in the market. For food we use the army supply table. That gives per 100 rations 112 pounds of flour, or in lieu 125 pounds of cornmeal; 125 pounds of beef, or in lieu 75 pounds of pork or bacon; but I do not give five meals of pork or bacon in a year because of the scrofulous tendency of our pupils. We are allowed 10 pounds of coffee or 2 pounds of tea. Of this I use scarcely one-half, and make up the deficiency with good rich milk. We are allowed 15 pounds of sugar or 2 gallons of syrup, but do not use so much. The coffee and tea both

must be sweet. Ten pounds of rice, or in lieu 15 pounds of beans or hominy ; 10 pounds of dried fruit, peaches, apples, &c., 1 quart of vinegar, 4 pounds of salt. Then, in addition, we are allowed all the vegetables we can raise. For 400 pupils we raise and consume about 1,500 bushels of potatoes a year, 400 bushels of turnips, 200 bushels of parsnips, 300 bushels of onions, with an abundance of green corn, beans, beets, radishes, berries, &c. Our usual bill of fare for a week is as follows:

SUNDAY.

*Breakfast*—Beef stew, hominy, coffee.

*Dinner*—Roast beef, mashed potatoes.

*Supper*—Stewed peaches, milk, pie or gingerbread.

MONDAY.

*Breakfast*—Beef steak, potatoes (boiled or baked), coffee.

*Dinner*—Roast beef, turnips.

*Supper*—Corn meal mush, molasses, milk.

TUESDAY.

*Breakfast*—Beef stew, stewed potatoes, coffee.

*Dinner*—Roast beef, vegetables (varied).

*Supper*—Stewed apples, tea, milk.

WEDNESDAY.

*Breakfast*—Beef steak, hominy, coffee.

*Dinner*—Roast beef, vegetable soup.

*Supper*—Oatmeal, milk.

THURSDAY.

*Breakfast*—Beef stew, potatoes (boiled), coffee.

*Dinner*—Potpie, stewed potatoes.

*Supper*—Stewed apples, tea and milk.

FRIDAY.

*Breakfast*—Beef stew with onions, potatoes, coffee.

*Dinner*—Roast beef, cabbage.

*Supper*—Cornstarch, milk.

SATURDAY.

*Breakfast*—Beef steak, stewed potatoes.

*Dinner*—Roast beef, vegetable soup.

*Supper*—Rice, tea.

This bill of fare of course varies with the season.

Our school hours are from 9 to half past 11, and from half past 1 to 4 o'clock, with an evening study hour three nights in the week, and general meetings, lectures, &c., other evenings.

For the boys, the latrines are in the rear and forty feet from the buildings, with abundant capacity, dry earth system.

For the girls, they occupy one of the rear rooms of the dormitory building. The accommodations are abundant, water by the dump-box system used. A full winter suit for a boy is heavy overcoat, coat, pants and vest of twenty-four ounce sky-blue kersey, army standard, shirt of prodigy check gingham, undershirt of red flannel, cotton flannel drawers, cotton socks, boots, wool hat or army regulation cap. For the girls, blue flannel dress, and circular of the same, chemise, night dress, knit undervest and drawers, flannel skirt, cheviot skirt, hat, handkerchief, collar, leggings, stockings, shoes and mittens, modified for summer with lighter clothing for both boys and girls. Stockings are changed twice a week; other underwear once a week.

The kitchen water is carried off into Letort creek, a swift stream one hundred and fifty yards from the kitchen. Garbage goes to the hog-pen.

The average number in the hospital per month, from July 1, 1885, to February 28, 1886, was 13; the prevalent diseases—consumption, scrofula, cutaneous, eye and malarial diseases. The number of deaths in the school last year was seven; this year, so far, two. Number of beds in hospital, twenty. Average population, nearly five hundred.

Very truly, yours,

R. H. PRATT,

*Captain and Superintendent.*

The following is my summing up of the results arrived at in my inspection of the McAllisterville school:

Location of buildings, fair, rather low.

Condition of buildings, decidedly out of repair.

Dormitories, very deficient in capacity; number of beds altogether insufficient; ventilation, by means of windows, good; decided deficiency of furniture.

School rooms very deficient in capacity and ventilation; light good, except in primary department; furniture old and uncomfortable.

Bedding generally fair, in a few instances foul; bed clothes, sufficient in quantity for present needs; sheets not washed sufficiently often.

Clothing—Boys', insufficient in respect to cleanliness; girls', insufficient in respect to warmth.

Food, sufficient and of fair quality, but somewhat lacking in variety.

Hours of study, sleep and exercise judiciously arranged, but play room accommodations deficient and rooms gloomy and unattractive.

Water supply, ample but open to suspicion of contamination.

Drainage, fair if properly attended to.

P Privies, neglected.

General health of school, moderately good.



## II. REPORT OF AN INSPECTION OF THE SOLDIERS' ORPHAN SCHOOL AT MERCER.

BENJAMIN LEE, *Secretary.*

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

To His Excellency GOVERNOR PATTISON.

SIR:—I beg leave respectfully to present the following report of a sanitary inspection of the Soldiers' Orphan School at Mercer, Mercer county, made in company with yourself and the Attorney General of the Commonwealth, March 15, 1886.

### Report.

#### LOCATION AND CONDITION OF BUILDINGS.

The buildings, six in number, are all frame, and stand on a hill side, on opposite sides of a country road. Those on the lower side of the road, three in number, are nearly at the foot of the hill and close to a piece of swampy ground through which runs a sluggish stream, and into which it seems to be intended that the girls' cess-pool should ultimately drain. This location, already objectionable on account of dampness, must then become doubly so from foul exhalations.

The principal building was built originally as a water-cure. The proprietor having succumbed to the injudicious use of his own methods of treatment, the establishment fell into disrepute, was finally abandoned, and for years remained tenantless. But little seems to have been done to remedy its dilapidated condition when it was dedicated to its present use. The ceilings are all low, no provision is made for ventilation; being situated on a steep slope, one side of the basement is entirely subterranean, the floors are defective, and have suffered from rats. The laundry, which was found on this floor, is small, very insufficiently supplied with the necessary facilities, and almost entirely without means for drying the clothes in bad weather.

The girls' lavatory and bath room in this building is a very squalid, comfortless place. The water flows from small holes in a horizontal iron pipe into a wooden trough in which they wash, and if they wish to drink they apply their mouths to these jets.

On the next or ground floor of this buildings are two small rooms, used as infirmaries, one for either sex—each containing one double bed. This building also contained two girls' dormitories, a girls' play room and the boys' clothes room and patching room.

The condition of the other buildings did not differ materially from that of this except in the fact that they were of more recent construction. All were neglected, out of repair and gloomy.

## CONDITION, CAPACITY AND VENTILATION OF DORMITORIES.

The first girls' dormitory, on the first floor of the main building has a floor space of 30×30 feet, with a ceiling 8 feet high, giving a cubic capacity of 7,200 cubic feet. This is occupied by 32 girls in 16 beds, thus giving an allowance of 225 cubic feet for each child. This room is heated by a stove, and has cross ventilation by its windows. This is the case with all the dormitories.

The second girls' dormitory is on the second floor of the same building. This has a floor space of 24×20 feet, with a ceiling 8 feet high, giving a cubic capacity of 3,840 cubic feet. 16 children here sleep in 8 beds, making an air allowance for each of 240 cubic feet.

The little girls' dormitory, which is found in another building, has a floor space of 24×48 feet with a ceiling 9 feet high. This gives a capacity of 10,368 cubic feet, which allows to each of forty children, sleeping in 20 beds, 259½ cubic feet of air. Most of the beds were narrow for two persons, some of them excessively so, the breadth of one which was measured being 33 inches.

The boys' dormitories are in two different building over the school rooms. One, containing 84 boys in 42 beds, has a floor space of 63×52 feet with height of ceiling 8 feet, giving a cubic capacity of 26,208 feet, or 312 cubic feet for each boy. The other, with an area of 45×30 feet, from which a room has been partitioned off of 15×12 feet, with height of wall 9 feet, contained 27 beds, in which slept 57 or 58 boys. This gives us a cubic capacity of 10,530 cubic feet or 185 or less cubic feet for each boy. Thus it will be seen that in only one dormitory did the air space reach one-half of the proper provision, and that in one of them it was not much more than one-fourth.

NOTE.—The dormitories are entirely unprovided with fire-escapes.

## CONDITION, QUANTITY AND QUALITY OF BEDDING.

The bedding consisted of straw sacks, many of them poorly filled, and the ticking often filthy. Mrs. McCandless, the matron, said that new straw was added once a quarter, and if the old was dirty it was thrown out. The bedding in the girls' infirmary was by no means in a sanitary condition.

## CONDITION, QUANTITY AND QUALITY OF BED CLOTHING.

The usual allotment of bed clothing in the girls' dormitories, was five thin blankets, and a comfortable, or four thin blankets and two thick ones. Many of them were worn to the last degree of tenuity. One or two extra ones were occasionally found where this was the case. The boys had as a rule four blankets and a comfortable. The blankets are washed every summer, the comfortables never. The dormitories being somewhat heated, the provision of bed clothing was probably sufficient for warmth, but many of the sheets were very dirty, and

some of them as well as the beds which they covered in a decidedly unwholesome condition.

#### CONDITION, QUANTITY AND QUALITY OF BODY CLOTHING.

It is barely possible that a full suit of boy's clothing *when new* would keep him warm. It is not probable that that of the girls would do so, as their only flannel garment covering the chest is a very thin worsted gown. But much of the clothing was worn altogether threadbare, and rags were seen on all sides. The condition of the sacks as seen in the laundry and mending room was very disgraceful. In one room was found an immense pile of old shoes and another of cast-off clothes, the latter ragged and filthy, the accumulation apparently of years. When the boys find their clothes gone beyond redemption they are in the habit of resorting to this old clothes heap to try to find something a little better than what they have on. In every regard the clothing must be condemned.

#### CONDITION, CAPACITY, VENTILATION AND LIGHTING OF SCHOOL ROOMS.

The principal school room has a floor area of 48×42 feet with a 12-foot ceiling, thus giving a capacity of 24,192 cubic feet. The largest number occupying this room except during chapel exercises or lectures is 92, which allows each 263 cubic feet of air. The lighting is tolerably good, and there is ample opportunity for cross ventilation by the windows. The school furniture is antiquated and uncomfortable. There are two recitation rooms opening out of this school room, each accommodating about twenty children. One of these is 20×18 feet and the other 20×15 feet, each with a ceiling 12 feet high. The first has, therefore, a capacity of 4,320 cubic feet, allowing each pupil 206 cubic feet, and the second of 3,600, allowing each pupil 171 cubic feet of air. The opportunities for ventilation are here not so good. The intermediate school room, with 48 pupils on an average, has an area of 33×18 feet, with height of ceiling 10 feet, affording a capacity of 5,940 cubic feet, and giving each individual about 124 cubic feet of air. It has fair light and opportunity for ventilation.

The primary school room measures 33×21 feet, with height of ceiling 10 feet; the average attendance here is 56, hence, the 6,930 cubic feet of air which it contains allow but little over 121 cubic feet for each child. The windows of this room are small and the light deficient. The school rooms are therefore very much over-crowded.

#### QUALITY AND QUANTITY OF FOOD SUPPLY.

The children sit at the table on long benches without backs. The dining room is low and over-crowded. I did not take its dimensions. The young woman who was superintending the arrangements for tea

informed me that, the breakfast all the year round consisted of coffee, bread and butter and molasses. Once in a great while varied with apple sauce or apple butter. Eighty-four loaves of bread were used for breakfast and supper respectively, and about seventy-two for dinner. She said that as she was the "dining room lady," she could not give me particulars in regard to the food, but thought that I could get the desired information from the "kitchen lady." That "lady" assured me that the range was entirely too small to enable her to give the children any hot dish for breakfast, and that it was with difficulty she could cook enough meat for dinner. They had fresh beef every day. This was first boiled and then heated through in the oven. The dinner consisted of meat, a vegetable, bread and water and molasses. Five pounds of coffee and a gallon and a half of milk made the coffee for all in the morning and for the "big folks" at night. Supper consisted of bread and butter, molasses, tea and sometimes rice or hominy or soup, and nearly always an apple apiece. The bread appeared to be light, well-baked and sweet. The quality of the butter was not objectionable. From the testimony both of the employés and of the boys I was led to the conclusion that the fare was greatly lacking in variety and relish, and often insufficient in quantity. Here, as at the McAllisterville school, it was said that the children preferred their coffee without sugar. The milk supply was evidently very scanty.

#### QUALITY AND QUANTITY OF WATER SUPPLY.

The water is pure and abundant, being brought in iron pipes from a spring on the hill above, and having been introduced originally for the purposes of the water cure. It is brought, however, only into the lower buildings, and all that is used in the others for washing, scrubbing and drinking must be carried up the hill to them. Hence scrubbing is not done as frequently as it probably would be with better conveniences.

The arrangements for heating water for bathing are entirely inadequate. Hence in the ordinary iron bath tubs, of which there were two in the girls' bath room already referred to, but one of them so badly cracked that the water ran out as fast as it was poured in, five girls bathed at once. Laundry tubs are also used. The same water is used until the matron thinks it is dirty and then fresh is procured.

In the boys' lavatory the same system is pursued except that the only bath tubs are laundry tubs and pickle barrels. The supply of towels is lamentably short, there being but fifty-five for two hundred and forty-nine persons, and the arrangements for drying them after washing being very limited. While, therefore, there is an abundance of good water, it is difficult of access for drinking, poorly distributed and inadequately utilized for purposes of cleanliness.

## CONDITION AND CAPACITY OF PLAY ROOMS.

The play room for the 85 girls was in its dimensions  $33 \times 24 \times 8$  feet, giving a cubic capacity of 7,336 cubic feet, or 86 cubic feet to each child.

That for the large boys, which was liable to contain 120, was  $30 \times 27$  feet in area, with a ceiling 9 feet high. Its cubic contents were therefore 7,290 cubic feet, allowing each boy  $60\frac{1}{2}$  cubic feet of air; while that for the little boys, containing but one window, was but  $12 \times 11 \times 9$  feet. This gave for 26 boys an air space of 1,188 cubic feet, or  $45\frac{1}{2}$  cubic feet apiece. The vitiation of the atmosphere was here increased by a large hole in the stove pipe, from which large volumes of coal gas must have escaped.

## CONSTRUCTION AND CONDITION OF PRIVIES.

The girls' privy had a board walk leading to it from the main building and was about thirty feet distant. The house was new and in good repair, and the accommodations sufficient. The well was a vault about twelve feet deep, lined with oak plank, recently constructed and not offensive, but, as already said, if allowed to drain into the marsh below, it must eventually vitiate the atmosphere.

The boys' privy was found to be old and out of repair. It consists of a long box on a truck, which can be wheeled out as often as it is full and emptied. This is done at a distance of perhaps six hundred feet from the nearest school building.

With proper attention this is the best form of privy that can be used in a country place, but there is reason to fear that it is neglected long after it should be emptied, that it is not properly covered constantly with ashes or dry earth, and that the contents when emptied out are not covered as they should be. The proper way to dispose of them would be to convey them to a neighboring farm and have them mixed with dry earth and other material and allowed to oxidize and form a compost.

It was evident that the accommodations were quite insufficient, and as a consequence all the ground in the neighborhood was in a filthy condition.

The drainage into the little stream at the foot of the hill was simple and inoffensive.

To sum up the conditions of this institution, it is badly over-crowded in every department; the buildings are some of them improperly located, and all more or less out of repair; the play rooms are ruinous, comfortless and inadequate; the cooking and laundry facilities are entirely insufficient; the clothing of all kinds is deficient, worn out and much of it filthy; the food is poorly cooked, monotonous, and sometimes insufficient. The employés are too few, and are greatly over-worked, and one of them—the male attendant—is deficient in intelligence and destitute of education.

*The general health* of the school has nevertheless not been notably bad. Dr. Magoffin, the physician to the institution, informed me that there had been but two deaths during the past year—one last summer from sunstroke, and one this winter from croup, with which the child was attacked on its way to the school as a new pupil, in consequence of exposure in a cold storm. There have been some cases of mumps and of whooping cough, two cases of eruption on the scalp (*tinea capitis*), one of eczematous eruption on the hand; no itch and no ophthalmia for some time back. Dr. Magoffin considered that there was great need of a proper infirmary building, as in case of an epidemic the present rooms so devoted would be utterly inadequate and unsuited. One case of typhoid fever had occurred, but had recovered without transmitting the disease to any others. The only patient in the infirmary at the time of my visit was a boy suffering from toothache.

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### III. REPORT OF AN INSPECTION OF THE ORPHAN HOME AT AT BUTLER.

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COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

To His Excellency ROBERT E. PATTISON,  
*Governor of Pennsylvania:*

SIR: I beg leave respectfully to submit the following report of a sanitary inspection of St. Paul's Orphan Home, Butler, Butler county, made, in accordance with your instructions, March 16, 1886:

#### Report.

#### LOCATION AND CHARACTER OF BUILDINGS.

The Rev. P. C. Prugh, the superintendent, who has occupied the position for three and a half years, informed me that the building was erected by the father of General M'Call as his private residence. It is a very substantial stone mansion, faced by a fine lawn, with about thirty acres of ground surrounding it. The position is a commanding one, on the outskirts of and overlooking the town of Butler from a considerable elevation. The halls are wide, the rooms airy and ceilings high. The workmanship is evidently of the best, and the building is in good repair. The number of children supported here is fifty, of whom twenty-three are those of soldiers. The institution is under the auspices of the Reformed church. Mrs. Prugh, wife of the superintendent, is virtually the matron, although she serves without compensation. There are two female teachers, two housekeepers, one seamstress, one cook, one laundress and one farm hand.

## CONDITION, CAPACITY AND VENTILATION OF DORMITORIES.

*Boys'.*—No. 1 has a floor space of  $18 \times 15$  feet, with a ceiling 11 feet high. In it are four beds occupied by eight boys. Its cubic capacity is 2,970 cubic feet, allowing each boy 371 cubic feet. This room, like all the others of this series, derives considerable warmth from the hall. The windows are large and high, and there is a large transom over each door. No. 2 is not quite so large as No. 1. It contains three beds for six boys. The amount of air allowance is considerably greater for each. No. 3 has an area of 18 feet square. Its capacity is 3,564 cubic feet. Four boys sleep here in two beds. Each boy's air allowance is, therefore, 891 cubic feet. No. 4, of the same dimensions, is occupied by eight boys in four beds. Air allowance to each  $445\frac{1}{2}$  cubic feet. No. 5 measured  $18 \times 14$  feet. Its cubic capacity was 2,772 cubic feet. It was occupied by six boys in three beds. The allowance of air for each was, therefore, 492 cubic feet. No. 6 was  $18 \times 15$  in floor measurement, cubic capacity 2,970 cubic feet, air space for each of six boys, occupying three beds, 495 cubic feet.

Each of these rooms contains a large clothes press in which the occupants have their own compartments.

*Girls'.*—No. 1, floor space 18 feet square, ceiling 10 feet high, second story extension. Cubic capacity 3,240 cubic feet. Air space for each child, six sleeping in three beds, 540 cubic feet. An open fire blazing on the hearth secures thorough ventilation. The girls are allowed to use this as a sitting room during the day. Nos. 2 and 3, opening out from this, are each  $18 \times 13$  in measurement, giving a cubic capacity of 2,340 cubic feet, and allowing altogether to the six girls, sleeping in three beds, 780 cubic feet of air each.

## CHARACTER AND CONDITION OF BEDDING.

The beds are well filled straw sacks with clean ticking.

## CONDITION, QUANTITY AND QUALITY OF BED CLOTHING.

The usual allowance of bed clothing appeared to be three blankets, a comfortable and a spread, all in good condition. The sheets are changed once a week, and oftener in special cases—daily if necessary.

## CONDITION, QUANTITY AND QUALITY OF BODY CLOTHING.

*Boys'.*—Each boy has three full suits, in good repair, composed as follows: Undershirt and drawers—woven for large boys, canton flannel for small—woolen socks, cheviot shirt, colored and white, jean coat, vest and pantaloons—the coat lined with canton flannel and wadded, the vest backed with heavy muslin and the pantaloons lined with canvas. All underclothing is changed every week. All the scholars are provided with night clothes, and compelled to wear them. They are amply provided with collars, neckties and pocket handkerchiefs.

The girls' wardrobe is if anything more complete and comfortable than the boys. Each girl has a warm wrap. All the children have gloves and mittens. Shoes in good order.

#### CONDITION, CAPACITY, LIGHTING AND VENTILATION OF SCHOOL ROOMS.

On the first floor are the office, parlor and prayer room, dining room, boys' sitting room and kitchen. The laundry is in a separate building in the rear, but approached under cover. The prayer room, a large, cheerful apartment is also used as a sitting room by the pupils. In the evening they come into the parlor, a delightfully furnished room, if they prefer to do so.

The school room, in the second story of the extension, is 22×18 feet in floor space, with a ceiling 11 feet high. There are never more than forty children here during school hours, rarely that number. It has windows on three sides, giving opportunity for cross ventilation. Its cubic capacity is 4,356 cubic feet, allowing each child a little less than 109 cubic feet of air.

The boys' sitting-room is comfortable and well lighted, but small, its dimensions being 18×16, with a 12-foot ceiling. Its capacity is increased by the boys' reception room into which it opens, where they hang their caps and coats when coming in from out of doors. A comparatively small number occupy it at once.

#### QUALITY AND QUANTITY OF WATER SUPPLY.

The water is brought in pipes from the town reservoir. It is of good quality and abundant. The boys' bath room, not in use during the cold weather, contains a full-sized bath tub, into which run hot and cold water. All the children are compelled to take a warm bath once a week. During the extreme cold of the present winter the boys have used the girls' bath room. This is warmed and carpeted, contains a full bath with running hot and cold water, a stationary washstand with hot and cold water, looking-glass and other conveniences. The supply of towels is ample. The laundry is well supplied with hot and cold water and contains eight tubs, besides washing machines, etc.

The ironing room is well arranged. The clothing of each child is marked, and when ironed and aired is placed in its own receptacle, which bears its name or number.

There is a pump close to the house, but it is used principally for the stable and cattle.

#### QUALITY AND QUANTITY OF FOOD SUPPLY.

The kitchen is furnished with a large range and a steam table amply able to supply all demands. The dining room is large and well lighted, and heated with an open fire.



Each child has its own chair.

Breakfast consists of coffee, bread and butter and molasses, fried potatoes, mush and milk, fried mush, stewed beans, buckwheat cakes, hash and so on, alternating.

Dinner, of soup, meat usually boiled or stewed, mashed potatoes, canned vegetables of various kinds, apple butter, bread and molasses and milk, and apples and sometimes pies, rice and sugar, etc.

Tea. Bread and milk, bread and butter, molasses, fried potatoes, fried hominy, prunes, apple sauce, dried apples stewed, tomatoes, etc.

Seven milch cows are kept; the children are allowed milk freely and much of the butter used on the table is made in the house.

#### CONDITION AND LOCATION OF DRAINS AND PRIVIES.

The girls' privy is approached by a covered way, and lies back of the laundry, detached from the main building. It is clean and comfortable and large enough for the number using it. The vault is 12 feet deep, and boarded with oak plank.

The boys' privy is constructed in the same way and stands about 100 feet from the house, somewhat in the rear.

The garbage is fed to the chickens in the barn yard. The kitchen water runs into the vegetable garden, and distributes itself.

A small frame building in the rear of the house is used as a printing office, the older boys being taught type setting. A good sized newspaper of four pages is set up here once a month, and struck off by a press in the town.

#### GENERAL HEALTH.

The general health of the institution is good. But three deaths have occurred in twenty years, the last four years ago from diphtheria. The physician, Dr. Samuel Graham, of Butler, is paid by the visit. It has not been necessary to call him in for any serious illness for three years. In January last however, a newcomer introduced itch, and before its presence was detected nine children had contracted it. It was at once vigorously attacked, the children were isolated in their washing and dressing arrangements and it is believed to be now entirely stamped out. This is said to the first time that this disease has gained a footing in the house.

There is no ophthalmia among the children.

#### GENERAL SUMMARY.

Location and character of buildings very good.

Condition of dormitories good; capacity slightly deficient in some rooms.

Bedding clean.

Bed clothing sufficient and in good condition.

Body clothing comfortable, respectable, sufficient and clean.

School room decidedly over-crowded; I can conceive of no reason why the prayer room should not also be used as a school room and relieve this evil.

Play rooms and sitting rooms cheerful, comfortable and, taken together, sufficiently large—but the boys' play room, if they are confined to it, decidedly insufficient.

Water supply good and ample, both hot and cold, and well distributed.

Food supply generous, of good quality and judiciously varied. The meat too uniformly boiled or stewed.

Privies comfortable and clean, not at present in any way dangerous. A very objectional plan prevails here however, as in many, perhaps most, country towns in this State, of covering over a full privy vault with earth and digging a new one a short distance from it instead of removing and disinfecting it. As the level gradually sinks, new earth is thrown on top, until the subsidence of level ceases. This process is repeated every few years, in accordance with the depth of the pit, so that in the rear of the houses on the street with small yards, the whole ground becomes honey-combed with these foul deposits. Covered up in this way the filthy mass has no opportunity for becoming oxidized, and retains all its poisonous properties. Gradually penetrating through the soil, it in time contaminates all the wells in the neighborhood, or, as is the case in some sections of the State, finds its way into subterranean streams and is carried, it is impossible to say to what distances, to infect unsuspecting communities and give rise to mysterious outbreaks of epidemic disease. Even if, in consequence of the large extent of the grounds in this instance, the air escapes serious contamination, and the water supply is brought from a distance and thus protected, still the wells of other citizens living on lower tracts may be undergoing contamination. This mode of disposal of the contents of a privy vault must therefore be unqualifiedly condemned.

The general health of this home seemed to be remarkably good, the children looked contented and happy, and whole aspect of the house was home like and comfortable, and in striking contrast to that of the dismal barracks which I had seen at Mercer the day previous.

#### IV. REPORT OF AN INSPECTION OF THE SOLDIERS' ORPHAN SCHOOL AT JUMONVILLE.

BENJAMIN LEE, Secretary.

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

To His Excellency ROBERT E. PATTISON,  
*Governor of Pennsylvania :*

SIR : I beg leave respectfully to submit the following report of a sanitary inspection of the Soldiers' Orphan School at Jumonville, Fayette county, made, in accordance with your instructions, March 18, 1886 :

##### Report.

##### LOCATION AND CHARACTER OF BUILDINGS.

The location is an admirable one, about six miles from the borough of Uniontown, on a spur of the Allegheny mountains, nearly 2,500 feet above the level of the sea. The superintendent, the Rev. A. H. Waters, has been in charge of the institution since its foundation, twenty years ago. It was moved from its original site on the outskirts of Uniontown to its present position eleven years ago. The buildings are eleven in number, generally very substantially built of stone. They include a dormitory, school house, hospital, laundry, wardrobes, nursery, shoe shop, barracks, church and barn. Some of the buildings are in need of slight repairs, which Mr. Waters assured me had been deferred because he was intending to erect a large new building which would to a great extent take the place of these.

##### CONDITION AND CHARACTER OF DORMITORIES.

Girls' No. 1 has a floor space of 29×36 feet, with a ceiling 9 feet high, giving a cubic capacity of 9,396 cubic feet, which affords to each of 47 girls, occupying 23 beds, an air allowance of 200 cubic feet.

No. 2 is an attic room with sloping roof. Its dimensions are 50×14 feet with estimated height of ceiling 5 feet high. It is occupied by 28 girls sleeping in 14 beds, who have therefore 125 cubic feet of air each. The opportunities for ventilation by windows are good. There are also slat ventilators and ventilating apertures in the walls.

These rooms are heated by flues from below.

Boys' dormitory No. 1 is occupied by 56 boys in 28 beds. Its floor space is 50×30 feet and height of ceiling 9 feet, giving a cubic capacity of 13,500 cubic feet, which allows each boy 241 cubic feet of air.

No. 2 measures 36×30 feet, with ceiling 9 feet high, giving a cubic capacity of 9,720 feet. It is occupied by 38 boys in 19 beds, whose air allowance is therefore about 256 cubic feet.

No. 3 has a floor space of 15×10 feet, with ceiling 6½ feet high. Its

cubic capacity is therefore 975 feet, which affords each of 8 small boys, sleeping in 4 beds, 122 cubic feet of air.

The nursery dormitory measures  $24 \times 17$  feet, with height of ceiling 8 feet. This gives a floor space of 408 feet and a cubic capacity of 3,244 cubic feet. It contains 4 beds; allowing 2 to a bed, this would give each an air allowance of 408 cubic feet, but one or two of the beds occasionally contain three children.

The hospital is a substantial stone building, containing two rooms, each of the following dimensions: Floor space,  $21 \times 18$  feet=378 feet; ceiling, 9 feet high. This gives a cubic capacity of 3,402 feet. In one ward are three single beds, and in the other four. This allows to each patient in the first 1,134 cubic feet of air, and in the second 850. These rooms, as well as the nursery dormitory, are heated by stoves; all the others by hot-air flues.

#### CHARACTER AND CONDITION OF BEDDING.

The beds are well-filled straw sacks. They are filled with entirely fresh straw every fall, and replenished as often as the matron considers necessary; in special cases very frequently.

#### CONDITION, QUALITY AND QUANTITY OF BED CLOTHING.

The allowance to each bed averages two sheets, two blankets, a comfortable and a spread. Once a week the upper sheet is changed to the lower, and the lower goes to the wash. The blankets are of good quality, and not badly worn. All of the beds are provided with bolsters and cases; some with pillows and pillow cases. The general appearance of the bed clothing was clean and neat.

#### CONDITION, QUANTITY AND QUALITY OF BODY CLOTHING.

The boys' suit consists of a flannel shirt half lined, cloth coat lined and wadded, pantaloons lined, socks and boots. Each boy has also a white shirt and collar for Sunday. Each has one Sunday suit complete and in good repair, one school suit complete and in good repair, and one working and play suit complete and in good repair. The night clothes are not provided except for the little boys who wear night drawers. The little boys have each about six complete suits, the very small ones wearing kilt skirts.

Girls' wardrobe: Each girl has at least two suits of fine and two suits of coarse underwear. A winter suit consists of flannel vest and drawers, woolen socks, flannel skirt, a stuff dress of half wool goods, blue in color, with skirt and waist lined. Each has three aprons in constant wear, a warm coat, two or three pairs of gloves, mittens, hoods and hats. Each child's socks are marked. Less than half of the girls are supplied with night clothes. Night clothing is provided for the patients in the hospital.

## CONDITION, CAPACITY, LIGHTING AND VENTILATION OF SCHOOL ROOMS.

The principal school room has a floor space of  $30 \times 50$  feet = 1,500 feet, which, with a ceiling 11 feet high, gives a cubic capacity of 16,500 feet. The largest number of pupils occupying it during study hours is eighty-five, which allows each about 194 cubic feet of air. A recitation room of the following dimensions,  $16 \times 15$  feet = 240 square feet of floor space, with ceiling 11 feet high, allows each of the twenty-five children who may occupy it at one time about 106 cubic feet of air.

The nursery, in which the very small children have their instruction, is a comfortable room used by about thirty-four children. Although somewhat crowded, the fact that in a period of two years and a half only one of these has needed medical attendance indicates that the ventilation has not been neglected. The ventilation of the school rooms is partly by windows and partly by apertures in the walls. The light comes from two sides, and is fairly arranged and distributed.

## QUALITY AND QUANTITY OF WATER SUPPLY.

The water is supplied from three sources—a spring, from which water is forced by a hydraulic ram into the kitchen, laundry, wash rooms and wherever else it is desirable—a well, 107 feet deep with pump, and a variable supply, depending on the water shed of the hill above, which is used to flush the drains; the water is pure and good and free from risk of contamination. There are three lavatories, one for the large boys, one for the small boys and one for the girls. Each girl has her own towel, tooth brush and comb numbered. Every day four clean roller towels additional are supplied. They wash in running water. All bathe in hot water once a week, the larger girls taking a sponge bath, and the smaller ones bathing in laundry tubs. Three of the smaller girls use the same water. The boys' play room and lavatory is a temporary arrangement, awaiting the erection of the new building, and is somewhat crowded. Each boy has his own towel and comb, and in addition four clean rollers are hung up every morning for use during the day. The small boys, numbering about thirty, have a play room and lavatory to themselves, the dimensions of which are  $16 \times 15$  feet = 240 square feet of floor space, and height of ceiling 7 feet. Even if, as is said, only eight boys occupy it at once, it must still be said to be inadequate, as its 1,880 cubic feet would allow each child only 235 cubic feet of air.

The laundry is a good sized room supplied with a steam washer, steam extractor, and sliding hot air driers. The boys bathe here in laundry tubs. The girls' play room has a floor space  $24 \times 16$  feet by  $18 \times 9$  feet = 562 square feet, with a ceiling 7 feet high. As many as forty girls may be here at one time, each of whom would have less than 100 cubic feet of air. The girls have also a pleasant reading room. There is a large unoccupied apartment used as a sort of lum-

ber room which might well be utilized as a play room, thus relieving the over-crowding of those devoted to this purpose. It seems to be almost a stereotyped arrangement in these institutions that the play room and wash room should either be one and the same apartment or should open into each other. It results from this that the play room, which should be the sunniest and most cheerful place in the house, is often the gloomiest and dampest.

#### QUALITY AND QUANTITY OF FOOD SUPPLY.

The institution is provided with an ice house and refrigerator, in which large quantities of meat can be kept. There are also capacious cellars for storing vegetables and a store house for groceries. The kitchen is supplied with a large range and steam table, which appear to be ample for all purposes. The oven will bake from 180 to 200 loaves per diem. The bread appeared light and the flour of good quality.

The dining room is comfortable, ceiled in wood, as is also the case with the school room and the boys dormitory. It is however too small. The children sit on wooden benches without backs. Each child has its own napkin, which is changed twice a week.

The bill of fare, as given by the cook, was as follows :

Breakfast. Coffee, bread, butter, molasses, beef steak, fried potatoes, hominy, boiled and fried, fried mush, stewed beans, buckwheat cakes, varied from day to day.

Dinner. Soup, meat, roasted, stewed or fried, pot-pie, fried bacon, cold ham. potatoes, turnips, parsnips, cabbage, tomatoes, rice and milk, tapioca and milk. bread pudding. rice pudding, pie and bread.

Tea. Bread, butter and molasses, tea, milk, mush and milk, apple butter, jams, stewed dried fruit.

Six milch cows are kept. During the winter all the children who are delicate have milk for supper, and in summer all who wish it.

White table cloths are used for dinner and colored for breakfast and tea. Apples are used freely.

#### PRIVIES.

These consist of V shaped boxes, placed on a strong incline, with the seats arranged lengthwise over them. Into these is introduced the water collected from the hills above so that with every rain they are thoroughly flushed and cleaned. These boxes open into covered drains which conduct their contents far down the side of the mountain and there distribute it. There are three privies, one for the boys, one for the girls and one for the nursery. Copperas is used as a disinfectant and deodorizer, if at any time they are not flushed with sufficient frequency. The kitchen slops are poured into an opening conducting into this drain.

## GENERAL HEALTH.

There are 174 scholars, 99 boys and 75 girls. During the last quarter the doctor has not been called in once. Dr. T. Surgeon of Uniontown is the physician and is paid three dollars a visit. There has been no epidemic in the school for eight years. The last was one of diphtheria, introduced from outside, which spread rapidly and caused three deaths. During the eleven years that the school has been on the mountain there have been eight deaths, two of which were from accident. There has been no typhoid fever in the school. There are no cases of ophthalmia or of itch.

## SUMMARY.

The location of the buildings is eminently healthful, their general character good, and they are with slight exceptions in good repair.

The *dormitories* are generally over-crowded. Their heating and ventilation is quite good. The fire-escapes are not to be relied upon.

The *bedding* and *bed clothing* are sufficient for each bed and generally clean, but the number of beds is insufficient.

There are no proper arrangements for disposition of the body clothing during sleep, and there is no adequate provision of night clothes.

The *body clothing* is comfortable, in sufficient quantity and kept in good order, but the boys should have drawers' for the sake of cleanliness.

The *school rooms* are well heated, tolerably ventilated and lighted, but over-crowded.

The water supply is good, pure and ample.

The food supply is of good quality, ample in quantity and judiciously varied, with a good supply of milk.

The privies and drains are well arranged and not likely to cause sickness.

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V.—REPORT OF AN INSPECTION OF THE SOLDIERS' ORPHAN SCHOOL AT DAYTON.

BENJAMIN LEE, *Secretary*.

COMMONWEALTH OF PENNSYLVANIA.

STATE BOARD OF HEALTH.

To His Excellency ROBERT E. PATTISON,

*Governor of Pennsylvania:*

SIR: I beg leave respectfully to submit the following report of a sanitary inspection of the Soldiers' Orphan School at Dayton, Armstrong county, made in accordance with your instructions, March 19, 1885:

### Report.

#### LOCATION AND CHARACTER OF BUILDINGS.

The institution is advantageously situated on a hillside in the borough of Dayton, a village of some five or six hundred souls. The natural drainage is good and the exposure southern. The buildings, four in number, are all frame. They have twice been to a greater or less extent destroyed by fire. They are divided as follows: 1. Residence of officers and girls' dormitory. 2. Boys' dormitory. 3. School house, dining room, kitchen and bake room. 4. Sewing room and shoe shop. They were erected for the purpose to which they are dedicated and are generally in good repair.

The superintendent is Mrs. Elizabeth Ambrose, the daughter of the original superintendent. She has occupied her present position four years, but was previously connected with the school as teacher and clerk for fourteen years. The employés are a male attendant, four teachers, a matron, a seamstress, and, much of the time an assistant seamstress, a baker, a laundress, a cook, a shoemaker and the gardener.

The number of scholars is 178, equally divided between the two sexes, the ages running from five to sixteen.

#### CONDITION AND CAPACITY OF DORMITORIES.

Girls' dormitory, second story main building. This is an L shaped apartment, having a floor space of  $36 \times 15$  feet +  $15 \times 12$  feet with ceiling 8 feet high. It contains 13 beds for two and two single beds for special cases, and is occupied by thirty girls. In two beds, therefore, there are three children. The cubic capacity is 5,720 cubic feet and the allowance of air for each child 192 cubic feet. There is no heat in the room. There is opportunity for cross ventilation by windows and by an open fire place.

Girls' dormitory, third story. This is an attic room with ceilings sloping on both sides to a low wall and dormer windows. The floor area is  $20 \times 69$  feet and the height of ceiling estimated 6 feet. The cubic capacity is, therefore, 8,280 cubic feet, and the individual air allowance for each of 57 pupils, occupying 27 beds, about 143 cubic feet.

The girls' infirmary in this building is heated by an open fire. It contains two beds, and is tolerably well adapted for the purpose. The girls' clothing room is also in this building. Two girls who make the fires, sleep in a room down stairs, of good size and well ventilated.

Boys' dormitory, second story, floor space  $57 \times 32$  feet, height of ceiling 8 feet. Hence, cubic capacity 14,592 cubic feet; allowance of air to each boy of 54 occupying 27 beds, 270 cubic feet.

Boys' dormitory, third story, ceiling sloping to the center, floor space  $57 \times 16$  feet, height of ceiling average 7 feet. Hence cubic capacity 6,384 cubic feet, allowing each of 35 boys, sleeping in 16 beds,



a little more than 182 cubic feet of air. There is no heat in any of the dormitories. The opportunities for window ventilation are good. Buckets are used for nocturnal necessities.

#### CONDITION AND QUALITY OF BEDDING.

The ticking was generally in good order and clean and the beds well filled. They are replenished, and unless in perfectly good order refilled, always three times and often four times a year; if in a soiled condition, as often as necessary. The beds, however, are not wide enough for more than two children.

#### CONDITION, QUANTITY AND QUALITY OF BED CLOTHING.

The allowance for each bed, as a rule (varied somewhat in accordance with the weight of the blankets, some of which were well worn) was three blankets, a comfortable, a spread and two sheets.

The girls' sheets are changed throughout every Friday and the boys' every Saturday. The sheets and spreads as a rule were clean and tidy. There are about fifty extra sheets beyond what are in constant use.

#### CONDITION, QUANTITY AND QUALITY OF BODY CLOTHING.

*Girls'.*—Each girl has six dresses and four skirts. The girls' under-clothing is, for the older ones, cotton, for the younger ones, canton-flannel. The older girls wear two flannel skirts, the younger, one. All wear aprons. The girls' dresses appeared to be in good order and of good material. Night gowns are not provided unless for those whose health is delicate. Every girl has a warm wrap. The under-clothing is changed every Friday. The socks of which there appeared to be an ample supply for both boys and girls are warm, and in good repair. They are made on knitting-machines in the school. The boys' boots and girls' school shoes are also made on the place, by the shoemaker, assisted by the boys, who thus acquire a trade. The boots and shoes were in good repair, and well made.

*Boys'.*—The boys' suit consists of a heavy blue flannel shirt, lined, a wadded coat, and cloth pantaloons not lined. Each boy has a full dress suit with two pairs of pantaloons, in addition to his every-day clothes.

#### CONDITION, CAPACITY, LIGHTING AND VENTILATION OF SCHOOL ROOMS.

Each of the older children has five hours of school attendance every day except Saturday. The largest number of pupils in the main school room at any one time during study hours is 120. The dimensions of this room are 40×50 feet of floor space with a height of 14 feet. Its capacity is therefore 28,000 cubic feet, which affords each pupil 233 cubic feet of air. Three recitation rooms open off from this room, each of the dimensions of 22×18 feet with a ceiling 14 feet high. They

have therefore a cubic capacity of 5,544, respectively. The two corner rooms have windows on two sides, affording fair light and opportunity for ventilation. The middle one has but one window and is close and poorly lighted. The largest number occupying the two first at any one time is 29, each of whom has 191 feet of air. The largest number allowed in the middle room is 15. They have therefore each about 370 cubic feet of air.

The girls' sitting room is cheerful, comfortably furnished and well warmed. It has a floor space of  $35 \times 15$  feet, with a ceiling 9 feet high, giving a cubic capacity of 4,725 cubic feet. Were all the girls to be assembled here at once it would of course be quite inadequate, but there are several other rooms into which they are allowed to go. The boys' play room, also light, cheerful and warm, is of the following dimensions : floor space  $33 \times 22$  feet, height of ceiling 9 feet. This gives a cubic capacity of 5,082 cubic feet.

#### QUALITY AND QUANTITY OF WATER SUPPLY.

The water supply is obtained from a well eighty feet deep, close to the building in which are the kitchen and dining room, and from a cistern into which spring water is poured, as a reserve. The water is clean, pleasant to the taste and odorless. The boys' privy is a possible source of contamination to the well. The facilities for heating water for laundry and bathing purposes are good. The children all take a hot bath once a week. The girls' lavatory is clean and comfortable. Each girl has her own comb and tooth brush ; hair brushes are not provided. The towels are rollers, probably about 10 feet in length. Four are provided for the morning toilet ; one for the working details during the day. The girls bathe in laundry tubs. They do not need to use the same water twice as there is a good supply, but in point of fact three sometimes use it before it is changed.

The boys' wash room was also in good order. There were thirty-six basins all clean and available. Six roller towels are put up every morning. The boys bathe in three divisions. Each has his own basin of hot water for the purpose, no two using the same water. The laundry is in a separate building.

#### QUALITY AND QUANTITY OF FOOD SUPPLY.

The dining hall is large, cheerful and well ventilated. The cooking and baking arrangements ample.

Eighty loaves of bread, or two hundred pounds of flour, are used every day, and seventy-five pounds of beef. Three cows are kept in milking order.

Breakfast consists of bread, butter and coffee, molasses, stewed fruit, hash and, in the spring, eggs.

Dinner, of soup, meat and vegetables varied from day to day, bread and molasses, water.

Supper, the same as breakfast, except that they have coffee or tea as they prefer.

On Sunday the dinner consists of soup, cold meat, bread and butter and cake or pie. Apples are provided freely every day.

#### LOCATION AND CONDITION OF PRIVIES AND DRAINS.

The boys' privy is situated about 150 feet from the well of drinking water. It is a leaching vault 15 feet deep, on rather a higher level than the pump. The house is in poor repair. A little copperas is thrown into it about once a month. The accommodation is somewhat deficient.

The girls' privy is easy of access and in good condition. It is raised several feet from the ground and is a surface closet, there being no excavation. Tan bark and lime are strewn around outside as absorbent and disinfectant, and the deposit frequently removed.

The principal drain runs between the two main buildings. It is an open drain, constructed of boards, partly covered and partly open, and discharges quite near the house into a muck heap in the garden. It has been condemned by the school physician.

#### GENERAL HEALTH.

The general health of the school was fair, with the exception of a tendency to sore throat, which I attributed to the imperfect drainage just alluded to.

The physician, Dr. W. L. Shields, is paid by the visit. During the existence of the school—a period of twenty years—there have been seven deaths. The last death occurred in October, 1885, and was the result of diphtheria. It was assigned by Mr. Shields to the same cause, and measures were set on foot to remedy the evil, but they were interrupted by the advent of frost. There has been no pneumonia in the house for ten years. In the boys' infirmary I found one case of acute ophthalmia, the only one in the institution. There are several whose eyes are weak from attacks in former years, or constitutional causes. One boy suffering from slight fever, which I attributed to sore throat, and one said to be convalescent from typhoid fever. The history of the case led me to doubt whether the diagnosis was correct. If so, it is the first case which has occurred in twelve years, and has given rise to no other. There is no itch or other contagious cutaneous affection among the children.

#### SUMMARY.

Location of buildings extremely good. Buildings clean and well kept and in good repair.

Dormitories deficient in capacity. Ventilation would be improved by heating. Fire-escapes not reliable. Bedding insufficient in quantity; not bedsteads enough. Condition good. Bed clothes in good

order, except that some of the blankets are very old and thin. Sheets and spreads in girls' dormitories clean; in boys' not always so. The former had been on five days and the latter four days at the time of my visit.

Boys' clothing in good condition, of good quality and ample in quantity as regards number of suits. Boys should be provided with drawers, and girls with woven or flannel undervests, and all with night clothes, and compelled to wear them.

Drainage imperfect. I have instructed the superintendent to have the drain referred to entirely reconstructed of vitrified drain pipe, with water-tight joints, connected under ground with one even gradient, to a spot much farther removed from the school buildings, and the water well distributed over the garden.

School rooms, with one exception, fairly well lighted and ventilated by windows, but all over-crowded. Water supply good and ample, but in danger of contamination. The boys' privy should be emptied and filled with clean earth, and the box system, with the use of ashes or dry earth, and frequent removal, substituted for both the boys' and the girls' houses.

Food supply ample and of good quality. Meat should, at least once a week, be baked, roasted or broiled. More milk should be added to the dietary.

The personnel of the attendants is good, the general aspect of the place cheerful and comfortable, and the children appear clean and well cared for.

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VI. REPORT OF AN INSPECTION OF THE SOLDIERS' ORPHAN INSTITUTE AT THE NORTHERN HOME FOR CHILDREN, PHILADELPHIA.

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WILLIAM B. ATKINSON, M. D., *Medical Inspector.*

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COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
*November 8, 1886.*

DR. BENJAMIN LEE,

*Secretary and Executive Officer State Board of Health :*

In accordance with your instructions, I visited this day the Soldiers' Orphan Home at Twenty-third and Parrish streets, Philadelphia. The original home has been united with the Northern Home for Friendless Children at Twenty-third and Brown streets, so that practically my investigation extended to that institution. The two buildings are substantially built of brick and stone, and are so situated as to permit of an abundance of light and air on every side. They are located in the

north-western section of the city, on high ground. They are in every way in good condition.

The dormitory on the third floor west is 53 feet in length, 21 wide and 14 high, and contains 32 beds. This gives 490 cubic feet for each sleeper.

The east dormitory is 48 feet in length by  $21 \times 14$  feet, and contains 23 beds, giving for each sleeper over 614 cubic feet. Both of these rooms have five or six large windows and were well ventilated.

The next room examined was one used as a kindergarten for the small children. It had chairs for 20 little ones, and was 21 feet wide, 18 long and 14 high.

The east dormitory, on the next floor, was 21 feet long,  $12\frac{1}{2}$  high and  $13\frac{1}{2}$  wide, with 23 beds, cubic feet for each being barely 154.

The west dormitory, on the same floor, has only 12 beds. Its dimensions are 21 feet by  $12\frac{1}{2} \times 7$ , equalling 153 cubic feet for each.

The next, called the T room from its shape, has 12 beds and a capacity of 109 cubic feet for each.

Next to this is the nursery, where the youngest children are kept during the day. Its dimensions were 14 feet high by  $8 \times 13 = 1,456$  cubic feet.

Along side was the nursery bed room. The children who occupy this room are from 3 to 6 years of age. There were 20 beds, with a cubic capacity for each of about 336 feet. A back bed room opened into this; contained 32 beds, with a capacity of 420 cubic feet. Each of these rooms had an abundance of windows for light and ventilation.

In what is the Soldiers' Home building, which is used for the girls only, the boys occupying the other house, the second-story bed room over the laundry is  $41 \times 18 \times 11$  feet high, with 23 beds, a capacity of nearly 379 cubic feet for each.

The third story is  $40 \times 17\frac{1}{2} \times 10$  feet high, with 20 beds, giving 350 cubic feet for each.

The room on the second floor over the dining room is  $27 \times 20 \times 11$ , with 18 beds = 330 cubic feet each.

A small room is  $16\frac{1}{2} \times 14 \times 11$ , and has 9 beds = 282 cubic feet.

The third-story room, with south windows opening on a veranda, contains 28 beds and is  $42\frac{1}{2} \times 14\frac{1}{2} \times 11 = 238$  feet for each.

The girls' school room is  $40 \times 19\frac{1}{2} \times 11\frac{1}{2}$ ; primary,  $27 \times 19 \times 11$ ; recitation room,  $17 \times 14\frac{1}{2} \times 11$ .

In all of the dormitories but one child was permitted to occupy a bed. The beds were of sufficient width, were of husks mattresses with a thin cotton mattress on top, were abundantly provided with blankets and other bed clothing, and were in most excellent condition in every way.

Each girl and boy has from four to six suits of clothing suitable to the seasons, of good quality, neatly made, and all in nice order. The

provision of underclothing, of stockings, shoes, in short of everything requisite for comfort and cleanliness was abundant.

There are 191 boys and 93 girls, soldiers' orphans, in the institution. To these must be added 63 boys and girls of the Northern Home, known as "friendless orphans."

During my visit I had the opportunity of seeing the children at dinner. The dining rooms were well lighted, but rather crowded. The table ware was all that could be desired, both as regards appearance and material. The food was abundant and of proper variety, and is carefully varied each day. The cooking, baking and preparation of the food was in charge of competent persons, who were proud to exhibit to me the products of their skill. While in the cellar, I examined the supplies and found everything to be of good quality.

I append a dietary for September, October and November, which was fully carried out at the meal in my presence.

It is well calculated to meet the wants of growing children, to keep them in health, and even to cater to their special needs. In one closet I found a shallow basket filled with home made gingerbread cut into small pieces, which the smaller children were permitted to visit as they wished. The healthy, happy looks of all proved that there was no lack in the quantity and quality of the food supply.

There are separate wash rooms for the boys and girls: each is provided with his or her own towel, used but once before washing; each a tooth brush, the use of which is compulsory; combs, brushes and soap. The boilers allowed an abundance of hot water. Bathing is carefully attended to under the surveillance of a special attendant.

The water supply is from the city water-works and is therefore abundant, though we cannot say the quality is of the purest. However, as it is the same supplied to the citizens of Philadelphia, it is needless to speak of its virtues.

The drainage is by means of a sewer, into which is carried everything, as wash water, slops and the flushings of the cess-pools. The privies are flushed twice each day.

By the kindness of a friend of the institution, a private house has been prepared as an infirmary. This is located directly across the street, and is in every respect a model of its kind.

The boys' infirmary has three sleeping rooms, each  $12 \times 14 \times 10$ , one  $10 \times 10 \times 10$ ; a bath room,  $10 \times 10 \times 10$ ; a sitting room,  $11 \times 20 \times 10$ . Each sleeping room has one double bed.

The girls' infirmary has one room on second floor containing one large bed. The room is  $15 \times 11\frac{1}{2} \times 8\frac{1}{2}$ , one room  $14 \times 10\frac{1}{2} \times 8\frac{1}{2}$ , with two single beds. Another room on the third floor is  $22 \times 9 \times 7\frac{1}{2}$ , not yet furnished.

In neither infirmary is there a single patient, nor has there been any sickness in the institution for a long time.

In conclusion, I must say that no inspection ever gave me so much

unalloyed satisfaction. The officers are well qualified for their several duties and evidently perform them with pleasure.

The only possible cause for complaint might be the small amount of air space allotted to the inmates of some of the dormitories, but the abundant opportunities for ventilation and the watchful care of the attendants almost entirely remove this objection.

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## VII. SANTARY REPORT ON THE JAIL OF CUMBERLAND COUNTY.

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By R. LOWRY SIBBET, M. D.

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GENTLEMEN: As physician to the Cumberland county jail and at your request I present the following report for the year 1885: In the performance of what seems to be a reasonable duty I must of course limit myself to the sanitary condition of the buildings and that of the prisoners, and I must necessarily be brief.

The front building, in which the sheriff resides and has his offices, presents a handsome appearance. It seems to be well built from the basement story to the roof. The walls which inclose the rectangular lot of ground on three sides are also well built and present a fine appearance. They are not too high for security, but on a lot of ground so small they interfere somewhat with the free circulation of the atmosphere around the jail.

The rear building is occupied by the prisoners. It is likewise three stories high including the basement, but in every way is badly constructed for the purposes of a county prison. It was this part of the building that the Board of Public Charities of the State condemned a few years ago. For the benefit of the public, you will allow me to mention several reasons for this, which are apparent to those accustomed to the inspection of such buildings. The basement story, half under ground, is used for the steam generators, stove coal and wood. The walls and arches are built of small stone, badly mortared, which makes it a den for rats. These quadrupeds find a way to get ventilation, though they need less than the prisoners. They have made for themselves free communication under the walls, and it is said through them to the outside, so that when a heavy rain falls the water runs into the basement. Recently it was necessary to carry out the water in buckets in order to prevent the fires in the furnaces from being extinguished. Interrogating an employé who has charge of the steam generators as to the number of rats in the jail, he said to me, "I'll bet there is a thousand here." This may be exaggeration, but the former sheriff told me on several occasions that he had great difficulty in abating the nuisance. He had constantly traps set for them, and one

night he caught twenty in a barrel or hogshead; and I have been told recently that six were seen in the sheriff's kitchen a few days ago. The baker and cook of the prison, have also informed me that they cannot keep bread and meat from them, except in boxes made for the purpose. All this corroborates the frequent complaints of prisoners during the last year that the rats come into their cells every night. The perforation of the floors and walls for the introduction of steam, water and waste pipes a few years ago, has made it a very easy matter for them to reach the third story. They make use of the pipes as a means of ascent and descent. All this shows that a prison should not be built in the loose and careless manner of a bank, barn or church.

Another nuisance I may mention for which neither the sheriff nor the keeper of the jail can be held responsible. Every one knows how rapidly roaches and bed bugs breed in buildings heated with steam or hot air when they have places in which to conceal themselves. A high temperature for seven months of the year, near the steam generators and pipes, favors the rapid production of insects, as well as rats and mice. Some years ago, six of the cells on the third story were wholly or in part lined with double layers of narrow plank for the purpose of making them more secure, but there could not have been a better breeding place devised for mice, roaches and bed bugs, than has here been provided.

The means for ventilation and illumination are also defective. Pure air and the blessed sunlight are two things which should not be denied even to the criminal classes. When the prison is full, as is usually the case in the winter, the breathing space is reduced to less than one-half that which is regarded as necessary for health; and in cloudy weather it is difficult to read ordinary print.

The prisoners who occupy the upper tier of cells suffer much more from the want of ventilation and exercise than the vagrant class in the court and cells below. They are required to remain in their cells the greater part of the twenty-four hours, and on court weeks all the time; and they are under the necessity of inhaling the warm, foul atmosphere, during the winter months, which rises from the crowd beneath them.

The steam generators and pipes for conveying the steam, the pipes for conveying water to the cells, and the means of drainage are all defective, and can never be made much better until the rear building is replaced by a new one. The digging of wells and pits in the jail yard for the reception of the sewage—at a considerable expense to the county—was a mistake. If the State Board of Health should visit Carlisle I have no doubt that these pits would be declared a nuisance. There are three of them; and they are now full within two feet of the surface of the ground. The sewage should be carried direct into



a pipe to some field on the eastern side of town where it might be utilized with the waste of the street.

It is due to the recent sheriff and to the keeper of the jail, as well as to myself, to state that we have been perplexed to know in the circumstances how to improve the sanitary condition of the prisoners. Those who have been required to remain more than three months have generally suffered in health. The want of fresh air, exercise and sunlight, and the crowded condition of prison during a period of the year, independent of the question of food, will give rise to a vitiated and debilitated condition of the system. It could not be otherwise. The bread served daily and beef served once a week has been good. Vegetable soup and coffee have been served every day. An irresponsible and especially an inexperienced prisoner should not be permitted to do the cooking, or even to distribute the rations of the prisoners.

We should perhaps refer to the moral condition of those committed, the greater part of whom are known as vagrants. The indiscriminate association of men, women and children in a county prison is not creditable to any people. In this direction there is also great need for reform.

In conclusion, allow me to say that the evils referred to have grown up in our midst and that the responsibility must be distributed. In a democratic or republican form of government the institutions of a country are just what the people make them.

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#### VIII. REPORT OF INSPECTIONS OF VACCINE PROPAGATING ESTABLISHMENTS.

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By the PRESIDENT and SECRETARY.

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In accordance with a resolution passed at the last meeting of the Board, and accepting the invitation of Dr. H. M. Alexander, the Secretary, accompanied by the President of the Board, immediately after the adjournment of the Board, proceeded to Marietta, Lancaster county, to make an inspection of the Lancaster County Vaccine Farm, of which Dr. Alexander is the proprietor. Dr. Germer has contributed to the *Sanitarian* so accurate and graphic an account of the method of procedure in this establishment that I cannot do better than to quote him. He says:

"We found there forty heifers in scrupulously clean stables, well fed and well cared for, all belonging to the adjacent stock farms. There you find the animals in all stages of the vaccination process. The stables are heated with stoves, and the animals are fed with the best hay and grain, and have plenty of good water to drink and clean straw for bedding. There are many children in this country who have not

the care that these animals have. The heifers are brought to the place in an upholstered wagon, looking like an old-fashioned court carriage. Bruised or unhealthy animals are rejected. In the operating room next to the stable there is a kind of a movable lounge, open in the middle like a saddle. This is put over the unsuspecting animal, and fastened with a wide saddle-girth. By a movement of a crank the machine is turned over, and there lays the heifer with her legs toward heaven.

"The inside of the hind legs is shaved by an expert tonsorial artist, and each leg is vaccinated with cow-pox on five places, without drawing any blood. After this the crank is turned around again, and the calf walks to her place in the stable. In six days the cow-pox is developed in all its glory and as large as half a dollar.

"The calf is taken to the operating table again, turned around, and washed and shaved around the sore places; the crusts are carefully removed and thrown away. In former times the crusts were sold, but they contain too many impurities for practical uses. After the removal of the crusts the lymph commences to flow, and is caught with fine camels' hair brushes, and put on ivory lancets or goose quills, fastened on long sticks of wood. Every point is painted over again the next day. Near the operating table is a dry well, several feet deep, kept at a temperature of 40° Fahrenheit. The bottom contains charcoal to absorb the moisture. In that hole the points are kept in a large tin box. One heifer furnishes from 2,000 to 2,500 good points. In the shipping room the points are re-examined and packed in glass, wood, paper or gutta-percha cases, and sent all over the world. They will be effective for many weeks if kept in a dry, cool place. If the vaccine virus is exposed to the sun or heat or moisture, or carried in the vest pocket like chewing tobacco, it will decompose and be worthless, and create a bad sore.

"The vaccinated heifers are returned to their owners, and generally a dollar is paid for the use of them."

The following from the pen of Dr. Alexander himself, read before the Lancaster County Medical Society, and considered of sufficient importance to be published as a tract by that learned body, gives an interesting account of his experiments in the attempt to propagate vaccine virus from horse-grease and of the discovery of an original case of cow-pox in Lancaster county:

"Jenner is credited with saying, that the disease known as grease on the heels of horses was the "source of small-pox" (Baron's life of Jenner, vol. i.) He is also credited with having said that "cow pox is the grease of horses conveyed to the udder of the cow by the hands of men, who, after washing the greasy heels of horses, milked the cows." He vaccinated his own child with swine-pox and found it effectual. We would ask: was Jenner an enthusiast, blind to results, believing every experiment a success? or are not many of the state-

ments ascribed to him, the utterances of other experimenters, or born of the imaginative mind of the writer? Does any one believe to-day that horse-grease is the source of small-pox? Has it been fully demonstrated that children inoculated with horse-grease are protected from small-pox, or have experiments with horse-grease communicated to the cow, thence to the child, been extended enough to convince you that it is one and the same, or as certainly protective? The maids of Jenner's English home are spoken of as the milkers; were they engaged in washing the horses' heels? We have horse-grease in abundance to-day, and in many sections men wash the sores and also do the milking; but cow-pox is far from being as readily found as in the days of Jenner. With a view to satisfy myself I instituted a few experiments, procured virus from the heels of horses affected with the grease, and tested it on three heifers. I had two failures, while one had a light pustular affection not altogether unlike cow-pox, but it was incapable of producing the vaccine disease. All of these heifers took cow-pox for me afterwards. True, I might have met with better results had I repeated my experiments; as it is they have tended to lessen my belief in the now generally accepted theory of horse-grease cow-pox. Is cow-pox a frequent visitor of the dairy? We learn of its existence in 1769, again in 1775. Then we are told, Jenner was unable to test its protective powers for many years, owing to its scarcity. It appears again in 1788, 1796 and 1798. From that time this enthetic disease of the cow does not appear as frequently as in Jenner's day; but it does exist to-day, and is more common than is generally supposed.

Some would have us believe cow-pox to be simply small-pox in the cow. Before properly investigating the subject, I believed this theory, and held that small-pox was so common in England in the days of Jenner that the milkmaids, convalescent from an attack, inoculated the cows while in the act of milking. This appeared at first sight to explain the presence and absence of the disease from the dairies. Again, the apparent absence of the disease to-day is explained by the fact that small-pox seldom enters the homes of our agricultural classes, but is confined largely to our cities and towns, whose population do but little milking. This reasoning would appear much more plausible were it not that history tells us of small-pox scourges too dreadful to relate, having visited England during the very years Jenner was unable to pursue his study of the subject owing to the disappearance of cow-pox; and the years of 1775 and 1796, when he was able to procure his experimental virus in abundance, were not noted years for small-pox epidemics. Again, heifers inoculated with small-pox virus have been unable to communicate vaccinia to man, but have instead given him true variola.

Passing over the period of the introduction of vaccination into America by Dr. Benjamin Waterhouse, as not strictly belonging to its

source, I will draw your attention to the spontaneous cases of cow-pox of later years, which furnish the source of our present strains of vaccine virus, and of whose histories we have more knowledge.

In the year 1866 a case of spontaneous cow-pox was discovered in France. The most complete history of this case I found in the report of the *Medical News* commission to examine vaccine farms, made by Dr. W. M. Welch, physician in charge of the Municipal Hospital, of Philadelphia. He says: "The history of Beaugency virus dates back to March 28, 1866. On April the 26th, it was reported to the Academy of Medicine of France, that a case of casual or spontaneous cow-pox had been observed at Beaugency, a town in France. Prof. Depaul 'Directeur De la Vaccine,' promptly repaired to that town, and saw as reported, a young milch cow thirty months old, in which the disease had appeared. The milker of this cows had noticed March 28th, that the animal was less gentle than usual; and presently, a French mid-wife observed vesicles on the udder, which bore a striking resemblance to vaccine vesicles, with which she was very familiar. This mid-wife, a veterinary surgeon, and four physicians of the town, closely inspected the animal, and found seven or eight vesicles on the udder at the base of the teats. In the same stable was another cow, but she bore no evidences of the disease. A horse in an adjoining stable was examined by the veterinary surgeon, but failed to present any symptoms of grease or any other disease." With a view to testing the genuineness of the disease, another cow and two children were inoculated from this virus; these trials were successful, the vesicles perfectly characteristic. M. Bechemeier and several other physicians then visited Beaugency, obtained some virus from this second cow, carried it to Orleans and vaccinated a calf, but out of six insertions only succeeded in obtaining one true vesicle. Had that also failed, we venture to assert that Beaugency vaccine virus would then and there have received its death blow, and the many millions of human beings who have since that time been vaccinated from this pure source would have been compelled to resort to the old deteriorated strains, or to humanized lymph with all its ills. And all this loss because it had been entrusted to hands not sufficiently expert in its bovine application; for I cannot but believe that all who have had any reasonable amount of experience in bovine propagation of vaccine virus, will agree with the assertion that the lymph would have done fully as well in the remaining five insertions as it did in the one, had it been properly applied. Another calf and several children were successfully inoculated from this one vesicle. From this calf Prof. Depaul began his propagation of bovine virus.

From Depaul's production the late Dr. Henry A. Martin procured the supply with which he in 1870 began the propagation of bovine virus in America. Dr. Martin claims his to have been from the 260<sup>th</sup> heifer of Depaul's series. To Dr. Martin we concede the honor of in-

roducing animal vaccination into America, and in his death the cause has lost an ever-willing and reliable advocate.

Dr. Martin fully realizing that by a long series of heifer-to-heifer-propagation the virus must deteriorate, and seeing the great advantage that would accrue from a fresh source, endeavored to find a case of spontaneous cow-pox in America. We are told by Dr. Welch he "offered a pecuniary reward." After several disappointments he finally succeeded in February, 1881, in finding a genuine case of spontaneous cow-pox at Cohasset, Massachusetts. This he tested, and has since continued its propagation.

Ever since I became interested in the subject of vaccine virus, in 1876, I have been constantly watching and inquiring for a case of spontaneous cow-pox. On the 28th day of January last I was rewarded by having reported to me a genuine case on the farm of Henry Fletcher, about one mile from Marietta, Pa. I have for many years held the belief that cow-pox is not as rare as many physicians suppose. It may appear strange that the only cases ever discovered in America should have been found by men engaged in the propagation of bovine vaccine virus, and so near their homes. This is easily explained by the fact that physicians not acquainted with the disease in cattle, and comparatively few have ever been inside a vaccine establishment, or examined the pock closely as it appears on the cow, could not readily diagnose a case should their attention be called to one, and the owner of a diseased heifer is not at all likely to notify any one of a light pustular disease on his cattle. This spontaneous case occurred in a fine Jersey heifer of about eighteen months. In company with Dr. J. M. Shurtle, I made a careful examination, knowing its great value in affording us a fresh source from which to propagate without risking the old strains, deteriorated or contaminated by a long series of heifer-to-heifer propagations. Remembering that Dr. Welch, when a member of the vaccine commission, made this statement, "When an original stock of virus of the highest excellence is discovered, it should be perpetuated with almost religious care." And having unbounded respect for the opinions of Dr. Welch on the subject of vaccination, I promptly notified him, together with L. E. Sayre, Ph.D., Professor of Pharmacy in University of Kansas, late of the *Druggists' Journal*, who, from his vast store of chemical knowledge, rendered me much efficient service in former undertakings. Dr. F. E. Stewart, of the *Therapeutic Gazette*, well known to you all as the only journal devoted exclusively to therapeutics in the English language, was also notified. With the able assistance of these gentlemen, I felt I could not get far wrong in my investigations without meeting with a staying hand. Under their directions I made my tests. The above-mentioned gentlemen, accompanied by Mr. Charles A. Heinitsh, ex-president of the American Pharmaceutical Association, Drs. Frank M. Musser and Oliver Roland, of the Lancaster County Medical Society, visited my establishment on

February 9, made such examinations as their time would permit, and requested the following affidavits covering the history of the case, with tests to that date :

*County of Lancaster, ss :*

On the 18th day of February, A. D. 1885, personally appeared before me, John W. Rich, a notary public in and for the Commonwealth of Pennsylvania, Henry Fletcher, to me well known, who, being duly sworn according to law, doth depose and say :

I live on my farm about one mile from Marietta, Pa. Some time in January, 1885, I noticed an eruption on and around the udder of one my Jersey heifers. My son, who is my only assistant in caring for my stock, informed me she was scabby and ought to be greased. This was neglected. I concluded I had met the same disease in cattle many years ago. I had never been in Dr. Alexander's vaccine stables at Marietta, nor had he ever had a heifer from me. I believed this was cow-pox, and mentioned my belief to one of my laborers, named William Shields, asking him to mention the case to Dr. Alexander, who came out, and, after examining the animal, stated that he believed it genuine cow-pox. He removed all the crusts and matter he could get, saying he would test it and bring others to see it. I have no other knowledge of anything connected with the case.

(Signed) HENRY FLETCHER.

Emlen Fletcher sworn : I am a son of Henry Fletcher, farmer, residing about one mile from Marietta, and assist my father at farm work and caring for his live stock. Some time in January, 1885, I discovered scabs on and about the udder of one of his Jersey heifers. I suggested to my father that she should be greased. Later Dr. Alexander, of Marietta, called and removed the crusts from her in my presence. I heard him speak of it as being an interesting case of cow-pox.

(Signed) EMLEN FLETCHER.

William Shields sworn : On the 28th day of January, 1885, I met Dr. Alexander at the post-office in Marietta, Pa., and informed him of a case of cow-pox at Mr. Henry Fletcher's which he ought to see. I told him that it was ripe. He asked me some questions about it, and expressed himself doubtfully, but said he would go and see it.

(Signed) WM. SHIELDS.

Dr. Alexander sworn : On or about the 28th day of January, 1885, William Shields said to me, "Doctor, you ought to see a case of cow-pox out at Henry Fletcher's." I had been to see a mistaken case in the county some time before, and went out expecting to correct another error ; but instead I found a fine Jersey heifer with an eruption on and around the udder, very much like what I was accustomed to in my own stables among my inoculated cattle. I felt sure it was

spontaneous cow-pox at the eighth or ninth day. I secured the crusts and lymph as best I could, took it home and vaccinated a child three years old and one heifer. I at once notified Dr. W. M. Welch, ex-president of the Philadelphia Medical Society, and the Medical News Commissioner to examine vaccine farms. I also notified Mr. L. E. Sayre, editor of the *Druggists' Journal*, and others. The first heifer inoculated from this spontaneous case took well and was fully a day earlier. I then inoculated one heifer from this one and another from the spontaneous case. Both came earlier than with the old strain of virus. I also vaccinated three children in one family on the same day. A boy of six years with the spontaneous vaccine, a boy four years from first heifer (one remove from spontaneous), a boy two years with my old strain. The first two were fully a day in advance, and fine typical cases. I am confident this spontaneous virus is more active than the old strain and believe it is owing to those having deteriorated from a long series of propagation from heifer to heifer.

(Signed) H. M. ALEXANDER.

Henry Connelly sworn : I assisted in the inoculation of heifers with the spontaneous vaccine as stated above by Dr. Alexander, and noticed the above-mentioned changes as to time and appearance of those inoculated.

(Signed) HENRY CONNELLY.

Dr. J. M. Shartle, affirmed : At Dr. Alexander's request, some time in January, 1885, I went out to see the Jersey heifer said to have spontaneous cow-pox. I compared it with what I had seen in Dr. Alexander's stables, and my diagnosis was cow-pox. I also noticed the difference among those heifers inoculated with the new and old strains in his stables. I examined the arms of three children in one family tested by Dr. Alexander, and on the sixth day the spontaneous vaccinations were fully a day in advance.

(Signed) J. M. SHARTLE, M. D.

Sworn before me,

JNO. W. RICH,  
*Notary Public.*

**Notes of an Interview with Dr. S. F. Martin.**

December 18. Called at Dr. Martin's, and had a long interview with his mother, at her residence in Roxbury. Learned from her that for several years before his father's death Dr. Stephen Martin, his son, had had the entire management of the vaccine propagation. Was driven by Dr. Martin to his establishment in Brookline; found very little doing. Three tables in a heated operating room, and three others in an outer room capable of being heated. All six tables are sometimes in use. These rooms are in the second story of a stone stable. The animals were formerly stabled in the lower story of the same building, but it was found to be too damp, and a separate frame stable was erected, with stalls for thirty-two animals. Dr. M. has had as many as seventy-five on hand at one time, some of them being boarded in neighboring stables. Dr. M. places the animals on the side, tying the legs together down to the table, makes his inoculation on the belly, udder or scrotum, and inside of thighs. Makes a large number of small incisions; thinks large sores very objectionable, as liable to produce inflammatory action and vitiate the lymph. Uses pressure, and takes the virus directly from the sore. Does not know what the fluid is that is said to flow from large sores, but cannot believe that it is vaccine lymph; more probably serum, the result of extensive inflammatory action, containing more or less lymph, but certainly not pure lymph. Believes that the claim of some propagators that lymph ought to be colorless, has no foundation; considers that a good active virus will always have some color, and, usually, a good deal of color. Decidedly bloody points are always very active. He prefers such for inoculating calves, and even for vaccinating human beings; has never seen any unpleasant results follow their use. This was his father's opinion. Never uses crusts or cones; considers the former much less reliable than points, and the latter as positively dangerous. Uses ivory points exclusively. Believes ivory to be denser than quill. Dr. M. performs all the vaccinations on animals himself. Rejects all animals that are not in perfect health, and all sores that do not present a typical appearance. Considers that there is no difference whatever in the virus derived from the two sexes. Has vaccinated as young as three weeks, but considers that objectionable. Prefers from three months to eighteen months, and strongly objects to cows that have borne calves. Thinks tuberculosis very common in older cattle, but has never found it in the young. Uses three strains of virus: the Beaugency, the Esneaux of Brussels, and the Cohasset, a native stock, discovered in 1881 by Dr. Cushing, but as he inoculates the same animal on different parts of the body, with each of the three different stocks, it is difficult to see how their identity can be preserved, and it is easy to understand that they should "all be equally typical in appearance and results."



Dr. M. makes his scarifications about  $\frac{3}{4}$  by  $\frac{1}{2}$  inch in size, and from  $1\frac{1}{2}$  to 2 inches apart, putting about seventy-five inoculations on one animal. He prefers to inoculate his animals one directly from the other, with fresh lymph, before drying. Objects very strongly to capillary tubes. Believes that much worthless (so-called) lymph is thrown upon the market by utterly irresponsible parties, simply as a mercantile venture. Hence the great number of failures reported from bovine virus.

**Notes of an Interview with Dr. Frank P. Foster.**

December 19, New York. Had an interview with Dr. Frank P. Foster, who was one of the earliest "bovine vaccine" propagators in America. As an educated and highly intelligent physician, his opinion is entitled to much consideration. He considers three months the most suitable age, but uses the calves anywhere from six weeks to eighteen months. Uses heifers and bull calves indifferently. Does not heat his stable. Does not use any protective covering after inoculation. Has tried it, but finds it difficult to keep on, and of very little use. Makes a large number of small sores rather than a few large ones, as the large ones incline to produce confluence and eczematous eruptions, as well as inflammatory action of a high grade, thus tending to suppuration. Does not think it possible to make the vaccine lymph flow. It must be taken directly from the vesicle, and pressure is essential to obtain it. Uses a clamp for this purpose. About 700 points can be obtained from a single animal. Uses quills entirely. They are more easily manipulated. Does not believe in the importance of colorless lymph. On the contrary, thinks a pinkish color indicates greater vivacity in the lymph. Always prefers to use such himself. Has long since abandoned the furnishing of lymph tubes and of crusts. Under ordinary conditions has a herd of about ten animals on hand. Has never found it necessary to inoculate more than one a day. Prefers not to have his stables crowded, as herpes is likely to occur under those circumstances. Thinks cones highly objectionable. Believes that much unreliable lymph is put on the market, and that the attempt to undersell must result in that. Did not find his sales materially increased by the Montreal epidemic. Places his animals on the back in a trough for inoculation and virus taking. While in that position tympanitis sometimes occurs. In that case the animal must be relieved for a time, when the swelling will subside, and the operation may be proceeded with.

**Notes of an Inspection of the Vaccine Propagating Establishment of Mr. John Wyeth, at Westown, Chester County.**

December 31. In company with Drs. Edwards and Engelman and Mr. Hering of the Board, Dr. Morris S. French, Dr. Sims, and others,

made an inspection of the vaccine propagating establishment of Mr. John Wyeth, at Westtown, near West Chester, Chester county, Pennsylvania.

The farm is situated in an undulating country, admirably adapted to grazing. As it contains several hundred acres, and is well-watered and wooded, the heifers used are placed under the most favorable conditions to avoid communication with other animals, and to be supplied with everything needed to maintain them in a healthy state.

The chief stable is a separate building, having a capacity for forty heifers, and there is an auxiliary stable which can contain as many more.

The stable is heated by a special apparatus to insure a uniform temperature. It has an asphalt pavement, is lined with hard wood, and is provided with stalls, mangers, halters, &c., of the most approved kind. The drainage has received the most careful attention, and is so arranged that the excreta are at once removed, and the heifers are kept dry and free from odor. The window space is ample, securing abundant light, and the air space for each animal is apportioned in the most liberal manner. The water supply is furnished by an artesian well. Similar arrangements are provided in the auxiliary stable.

The operating room is in a building by itself, and is equipped with the necessary tables, instruments, and the appliances required for the vaccinations, and for collecting the virus. The drying, packing and storage rooms are contained in Mr. Wyeth's Philadelphia laboratory. The fresh lymph, after collection, is transferred to the laboratory, where it is prepared for distribution, receiving the treatment necessary to prevent change in any climate.

The animals and the inoculations have been placed under the immediate charge of Dr. W. L. Zuill, Professor of Practice and Obstetrics in the Veterinary Department of the University of Pennsylvania, which is a guarantee that every subject connected with the hygiene of the animals will receive adequate attention. His familiarity with the diseases of animals will be of special value in determining the fitness of the heifers for furnishing a supply of lymph. The careful investigations of Dr. Zuill will thus secure the vaccine complete immunity from any kind of infection. He is assisted by a special staff of skilled attendants.

Every effort has been made to secure a stock of virus of perfect purity. To this end Dr. C. E. Sajous, Belgian Consul in Philadelphia, was requested to visit the world-famous Belgian Vaccine Bureau, where alone can be obtained the Bordeaux stock, discovered by Dr. Dubreuhl in 1881, which has now the highest reputation of any in Europe, and obtain a supply from there.

Dr. Sajous' efforts met with success, and the virus, just obtained from the finest calf in the Brussels stables, was placed in his hands imme-

diately before leaving Antwerp on his return. During the voyage across the Atlantic the virus, bottled and packed with the greatest care, was maintained by means of ice at an equable low temperature, and upon arrival here was in perfect state, as successful inoculations practiced with it here have shown. The following is Dr. Sajous' report, with the certificate of the president of the board of the Brussels bureau :

ROYAL BELGIAN CONSULATE,  
PHILADELPHIA, *December 1, 1885.*

*Messrs. John Wyeth & Bro., Philadelphia :*

GENTLEMEN : At your request I visited, during my recent trip to Europe, the vaccine bureau of the city of Brussels, so justly renowned for the great superiority of the vaccine virus which it produces.

Under the auspices of the Belgian government, untiring in its efforts to promote the welfare of the Belgian people, the "Office Vaccinogène Central" of Brussels was started with a view to furnish gratuitously to all the physicians of Belgium the vaccine matter required by them. The most improved methods for the production of the purest possible bovine virus were employed, and these being further improved upon by the distinguished physicians in charge, and especially the present superintendent, M. de Givé, have attained a degree of perfection which insures almost universal success when the virus is employed for vaccination.

The buildings occupied by the "vaccine bureau" were specially constructed for the purpose within the inclosure of the veterinary college, the inoculation room, stable, preparation room, &c., being so situated as to insure proper ventilation and to facilitate their maintenance at an equable atmosphere as regards temperature and dampness, by means of special appliances which are in operation night and day during cold weather.

The selection of animals receives very great attention. Calves between three and four months old, and not weighing less than two hundred pounds, are alone used. These are admitted to the stables only after having been carefully examined and when the presence of perfect health has been ascertained.

As a result of the foregoing means, the successful vaccinations throughout Belgium averaged for the year ending January 1, 1885, the remarkable proportion of *ninety-eight per cent. (98%)*. The proper selection of calves as to age prevents the violent local inflammation following the use of bovine virus obtained from older animals, while their careful examination before inoculation and after death, renders the healthy character of the virus as positive as it lies in our power to ascertain.

To Dr. E. Janssens, president of the board of supervisors of the "Office Vaccinogène Central de l'Etat," I am especially indebted for the

vaccine virus I have brought you, which was obtained the day of my departure from Antwerp for this port.

Yours very truly,

CHARLES E. SAJOURS, M. D.

[Translation.]

KINGDOM OF BELGIUM, MINISTRY OF THE INTERIOR,  
OFFICE OF THE CENTRAL BUREAU OF VACCINATION.

I, the undersigned, president of the board of supervisors of the State vaccine bureau and inspector-in-chief of the hygiene service of the city of Brussels, hereby certify that the vaccine virus delivered to Dr. Charles E. Sajours of Philadelphia, during his stay in Brussels, was obtained from calves vaccinated at the above bureau. In attestation of which I delivered the above certificate.

(Signed)

DR. E. JANSSENS.

*November, 1885.*

Dr. Bartholow, professor of materia medica, general therapeutics and hygiene in the Jefferson Medical College of Philadelphia, has consented to have a general supervision of the methods and processes employed in obtaining the virus and of the general hygiene of the establishment.

It is certainly difficult to conceive of an establishment of this kind more fortunate in its location, more admirable in all its appointments, or more scrupulously guarded in every way against possibilities of contamination or deterioration of virus. The impression left upon the minds of all the members of the Board who participated in this inspection was that it was the determination of the proprietor that everything that the lavish outlay of means could secure to provide this State and country with a pure and reliable bovine virus should be here brought into requisition, and that nowhere on this side of the Atlantic had all the necessary conditions been more completely realized.

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IX. REPORT OF AN INSPECTION OF THE STATE REFORM SCHOOL  
AT MORGANZA.

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By BENJAMIN LEE, M. D., *Secretary.*

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COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 1532 PINE STREET.  
PHILADELPHIA, *October 15, 1886.*

*To the Honorable the President and Board of Managers of the State  
Reform School at Morganza :*

GENTLEMEN: I have the honor to make the following report of an investigation into the causes of an epidemic of continued fever, exist-

ing in one of the buildings of your institution, made by Medical Inspector Dr. R. Lowry Sibbet and myself, at the request of your superintendent, Mr. Quay, October 13 and 14 :

#### Nature of Illness.

Up to the time of our visit, twenty-three cases of fever had occurred, one of which had terminated fatally. Of these twenty-three cases, fifteen were from one building, while the remaining eight were about evenly distributed among five other buildings or wings.

These eight were of a much milder type than the others. The buildings in which the large number of cases occurred is that occupied by "E" family. Of forty-six persons sleeping in the dormitory of that building, fifteen have been taken sick, or one-third of the entire number. We examined all the patients in the infirmary, sick and convalescent, as well as those who had returned to duty, exhibiting the disease in every stage, from the second day of the attack to end of the sixth week. It is our opinion that the large majority of the cases have not been true typhoid or enteric fever, but rather a low type of continued fever; some of them, perhaps, properly to be designated as bilious fever. The medical treatment which they had received appeared to us judicious.

#### Causes of the Outbreak.

We find several conditions attributed to the production of this epidemic :

*First.* The introduction of steam, of quite high temperature, into the rain-water spouts which communicated directly with the main sewer, the result of which has been to draw up the air from the sewer and convey it through the open windows of the dormitory, close to which these spouts open in the gutter of the roof. In support of this theory we would call attention to the fact that a large proportion of the cases occurred in individuals whose beds were in close proximity to the windows.

*Second.* The existence of flues running from the cellar to the dormitory, originally designed as hot-air flues, but now serving only to convey the cellar and ground air directly to the dormitory.

*Third.* The damp condition of the ground around the disused furnace and boiler in the cellar.

*Fourth.* The over-heated condition of the cellar as compared with the remainder of the house, establishing a strong upward current from the former to the latter.

*Fifth.* The possible opening of a connection with the sewer by rats, which have gnawed off one of the lead water pipes below the dining-room sinks, where it is said there is a bad smell in the morning.

*Sixth.* The defective condition of the dining-room sink, which is cracked through and permits water to escape into the wood work, causing the wood to decay.

*Seventh.* The over-crowded condition of the dormitory.

**Suggestions for the Removal of the Causes of the Outbreak and Continuance of the Fever.**

*First.* All connection between the rain-water spouts or conductors and the sewer should be severed, and the rain water conducted on the surface.

*Second.* The main sewer should be flushed for twenty-four hours with the largest head of water that can be commanded.

*Third.* The main sewer and all the house connections should be disinfected.

*Fourth.* The evacuations of those ill with fever should be passed in vessels containing a large quantity of a strong disinfectant solution and then carried a considerable distance away on the farm and buried a foot deep.

*Fifth.* The bedding in the infected dormitory should be completely changed, new ticks should be furnished, new straw put in them and the blankets washed.

*Sixth.* The floors and all other wood work of this dormitory should be washed with a solution of carbolic acid or of bi-chloride of mercury.

*Seventh.* The walls of the dormitory should be calcimined.

*Eighth.* There should be a complete new dining-room sink, both iron and wood work; the old, decaying wood being entirely removed.

*Ninth.* Careful investigation should be made to determine whether the sewer has been opened into by rats under this building.

*Tenth.* A defective trap in the floor of the laundry in the girls' building should be put in order.

*Eleventh.* The flues from the cellar to the dormitory should be at once walled up.

*Twelfth.* The establishment of a strong exhaust current at the terminal end of the sewer, by means of a steam engine and piston, would aid materially in keeping the sewer free from obstructions.

*Thirteenth.* As a few cases of the fever have occurred in other divisions, the connection of the rain-water conductors of all the buildings with the sewer should be severed.

Believing that the adoption of the foregoing suggestions would completely rid the institution of the infection which appears now to have a strong foothold in one, at least, of its buildings, I strongly urge the same upon the attention of your honorable body.

**Addendum.**

As an addendum to the preceding report, I cannot too strongly express my conviction of the urgent necessity existing for another building for the inmates of this admirable institution. All the dormitories, without exception, are over-crowded, some of them to at least double their capacity, measured by the lowest limit assigned by the laws of sanitary science.

So long as this condition of things exists, the management of any epidemic that may occur will be a matter of great difficulty. This remark applies to the infirmary with even greater force than to the dormitories. The matter cannot be brought to the attention of the Legislature too soon or with too much earnestness.

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**X. REPORT OF AN INSPECTION OF THE BEDFORD COUNTY  
ALMSHOUSE.**

By R. LOWRY SIBBET, M. D., *Medical Inspector.*

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CARLISLE, PA., *August 18, 1886.*

BENJ. LEE, M. D.,

*Secretary of Board of Health of Pennsylvania :*

DEAR SIR: Your letter of the 12th inst., authorizing me to proceed without unnecessary delay to the Bedford county almshouse and to make a careful sanitary inspection of the same was duly received. In accordance with your directions, I left this place August 16, and after an absence of the greater part of three days, I submit for your consideration the following report :

The Bedford county almshouse is pleasantly located about two miles and a half from the town of Bedford on the road leading through what is called the Cumberland Valley to Cumberland in Maryland. At this point the valley is about half a mile broad, bounded on the north and south by ridges covered with timber. The buildings are on the south side of the road. The main one was erected fourteen years ago and is four stories high ; the basement is built of sandstone and the remaining three stories of brick. It is situated in a somewhat secluded spot, having no extensive view, though its surroundings are cheerful and certainly healthful. It is covered with slate.

If I were permitted to criticise the plan of this building and grounds I would mention three radical defects.

*First.* It is four stories high, which, for the purposes of a county almshouse, is a mistake. When we consider the condition of most of the inmates of such institutions this becomes apparent. They are often physically unable to ascend and descend long flights of stairs. They are frequently far advanced in years, or are lame from one cause or another, and cannot go up and down stairs, except with inconvenience and pain. As a result, they do not get the exercise necessary for health and comfort, and besides, such persons cannot be easily rescued in case of fire.

*Second.* There is but a single stairway for the inmates. The two classes, males and females, have, therefore, the opportunity of being frequently together, which is certainly a mistake. This, I think, will

also become apparent when we consider the moral character of at least some of the inmates. Even five per cent. of lustful and grossly immoral persons in such an institution may be the cause of much disorder and disgrace to a county. It is of this evil that the steward especially complained to me, and apparently with good reason. Indeed there is nothing to prevent the sexes from being together at any time, so far as I could discover, except the watchfulness of the steward.

*Third.* I may state that the county has not provided separate grounds for exercise and recreation, or indeed any place specially for these purposes. The building is too near to the road in front, and the barn, garden, building for the insane, bake-oven, hog pen, ice house and water closets, occupy the ground on the other three sides.

The main building is quite large enough, there being at present in it and in the building for the insane 34 male adults, 38 female adults, and 8 children, making in all 80. In the winter a few more are added. Both buildings are heated with steam, and I was informed, that all the apartments can be made comfortable in the coldest weather. Both are well lighted and can be well ventilated.

The corridors of the main building extend its entire length. The males and females take their meals in separate dining rooms which are provided with dumb waiters ascending from the kitchens in the basement. The dining rooms and kitchens are on each side of the stairway. The steward and his family occupy rooms on the right of the main entrance and from these a private stairway ascends to the fourth story. A room on the third story is used for a chapel, in which religious services are held occasionally by the ministers of town. It is large enough to seat fifty persons or more. There are water closets at the ends of the corridors, but the drainage from them is very defective, several of them are closed, because they are not in a condition to be used. The stench arising from them indicates a stoppage in the waste pipes, since the institution is well supplied with water. Adjoining the closets are bath rooms, which, with the exception of one, seem to be in a good condition.

Until four years ago, the insane were kept in the west end of the fourth story; one can scarcely conceive of an arrangement for this class of inmates deserving of greater condemnation. These rooms and the water closets remain very much in the filthy condition in which they were left. A mother and two bastard children are kept here, one of which is idiotic. The mother is no doubt a nymphomaniac, and hence ungovernable. At the same time she is filthy in the extreme, having no sense either of cleanliness or of shame. There can be no apology, however, offered for this condition of affairs. Water, soap and disinfectents would do much to remove the stench in this part of the building, though they would not repair the broken doors or injured walls. Indeed the greater part of this building is in need of



these agents properly applied and to these we might add lime or white-wash.

I had no opportunity of observing what kind of meals were set before the inmates, but the bread in the pantry shown me was good. It was painfully evident, however, that the bedding and clothing of the inmates are of the cheapest and poorest kind.

There is but one fire-escape attached to the building and it is entirely unsuited for the escape of persons such as are usually admitted into almshouses. It is an iron-jointed ladder twelve inches broad which hangs from the fourth story window of the east end. An active able-bodied young man or woman might descend in safety on such a fire-escape, but how any aged or lame person could descend in safety is difficult to understand.

The small building recently erected for the insane is placed a few yards east of the main building. It is a neat one story brick structure covered with slate, but without any basement or cellar. It is large enough to hold a dozen or perhaps fifteen inmates. At present there are only eight in it. The wards for the sexes are separated by a partition and a door. The present attendant, a stout intelligent man keeps the wards and water closets in good condition. The very small enclosures—each about ten steps square—given to these insane creatures for exercise and recreation may be taken as evidence of the obtuseness of men who have given no attention to sanitary conditions and requirements. No one would think of keeping as many steers in such narrow enclosures even for a single month. Whilst the condition of these poor creatures has been much improved, since they were brought down from the fourth story of the main building, it is to be hoped that the authorities of the county will consider the question, whether an insane person has not as much need for physical exercise and the means of recreation as a sane person.

The steward informed me that it has been impossible for him to keep the institution in as good condition as it should be—that the directors of the poor paid for the services of only three persons besides himself and wife—the attendant of the insane and two farm hands, one of whom is an inmate—that the directors refused to spend any more money for repairs on the water closets and waste pipes, &c. and that they paid him but eight hundred dollars a year for superintending the institution, the farm (140 acres) and the garden—and that out of this salary he had to pay one hundred dollars for an engineer, as well as the wages of all the help needed for baking, cooking, washing, making bed and body clothes and for mending them.

To remedy the defects herein referred to, as far as it is possible, without involving a heavy expense, the following changes and repairs are suggested, and the county should be required to make them :

*First.* There should be given at least half an acre of ground to each sex exclusively for exercise and recreation, and in each of these en-

closures there should be placed benches or chairs for a dozen or more persons, and each should be furnished with water closets. This would imply the removal of part of the garden on the west.

*Second.* Every county almshouse should have two stairways separated from each other. They need not be grand, but they should be easy of ascent and descent and should be at the ends of the building with doors of exit likewise at the ends of the building leading to the grounds for exercise and recreation. In this case a stairway should be constructed at either end. This might be built inside or outside the present walls. It would be better to remove the present stairway to the south-east corner and to construct another in the south-west corner. The reputation of the institution and the safety of the inmates from fire require this.

*Third.* Low partitions should be made in the corridors so as to separate the sexes. In these doors should be made so that all might conveniently reach the chapel, and in case of fire one or other of the stairways.

*Fourth.* The water closets and waste pipes should be immediately repaired and purified. The pipes are too small or the point of exit is too high.

*Fifth.* With stairways at the ends of this building there would scarcely be need for fire-escapes, but the law requires them and no time should be lost by delay. They should not be a mere apology.

*Sixth.* The insane mother and her insane child should be removed from the fourth story and placed in the insane department.

*Seventh.* A female attendant should be employed to take care of the female insane. Morality requires this much at least of a civilized people.

*Eighth.* The grounds connected with the department for the insane should be large enough for exercise and recreation and they should be ornamented with walks, shruberry and flowers.

With these changes and repairs this institution would become a credit to the beautiful county of Bedford.

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## XI. REPORT OF AN INSPECTION OF THE LAKE SIDE HOTEL EAGLESMERE.

By E. D. PAYNE, M. D., *Medical Inspector.*

TOWANDA, PA., *September 17, 1886.*

BENJAMIN LEE, M. D.

*Secretary of State Board of Health :*

SIR: I have to report that, in obedience to your order of the 3d inst., I proceeded to "Lake Side," Eaglesmere, and on the evening of the 8th and morning of the 9th inst. inspected the house and grounds.

I found the house well appointed and apparently well conducted; rooms, corridors, kitchen, closets and drains in a cleanly condition, free from odors and apparently from taint. The grounds presented no subject of remark from a sanitary point of view, except the tailing of a kitchen drain about 70 feet from the house, which was freshly and abundantly served with fresh lime.

Perhaps the above would be a sufficient report for a strict compliance with my orders, but the fact that a case of sickness existed in the house; that it had been called typhoid fever by the attending physician; that this opinion was concurred in by a brother of the young lady who was ill, also a physician; that guests had left the house in large numbers from dread of the disease and by advice of physicians; that the physician naturally felt advisory duties due to her clientage, though not at the time sick; that the proprietor, Mr. J. S. Kirk, felt himself injured in business and the healthful repute of his house brought in question, seemed to justify me in exceeding the strict letter of my order and investigate the circumstances.

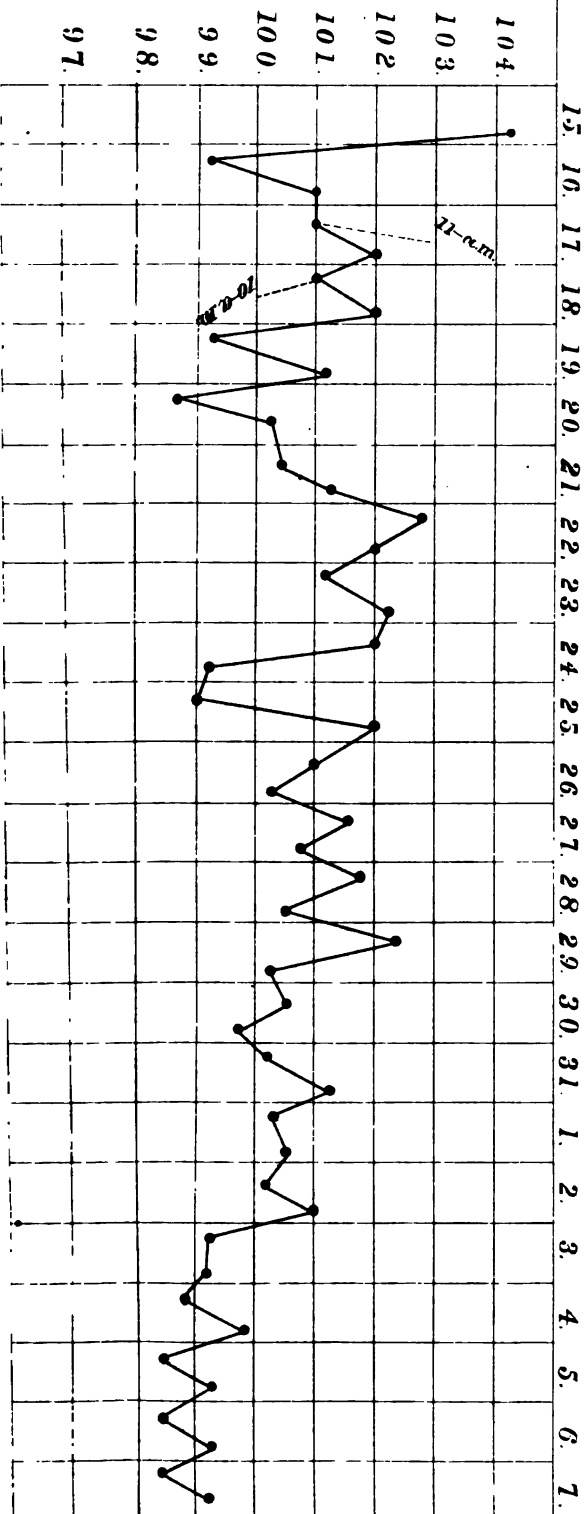
The questions for consideration are two; first, was this a case of typhoid fever? Second, was there any reasonable supposition that it had its origin from unsanitary condition of the house or grounds. The evidence on each point is somewhat contradictory.

I. First, as to the fever. At my first interview with the doctor I remarked that it was peculiar that the first week of typhoid fever should present such a temperature record and such abdominal symptoms, and requested a temperature chart and record of the case, stating that I would forward them to you. I transmit them herewith—the chart, marked “A,” with record, marked “B.”

I cannot concur in the opinion that this was a case of typhoid fever, for the following reasons: First, the temperature chart contradicts it. I suppose all teachers and practitioners at present accept Wunderlich's statement of a slowly-rising temperature during the first four days, until 104 degrees is reached. On this point Aitkin (English fourth edition, page 386,) makes some very positive statements. According to the doctor's statement to me, the great fall of temperature noted on the 20th and 24th days, followed immediately after a thorough evacuation of the bowels by an evacuant. This is not mentioned in the report and is inconsistent, in my opinion, with the action of typhoid. The chart shows a sudden fall of temperature on the 24th, reaching 99 degrees on the morning of the 25th, yet in the record of the 25th I find the first typical statement of typhoid fever. It also fails to show the great fluctuations of temperature on approaching convalescence.

*Second.* Another point not mentioned in the record is the fact that the young lady took a bath in the lake on the evening of the 14th instant, though expecting her menses the next day. On the evening of the 15th she had a severe chill, as per record, followed by severe

# A. TEMPERATURE CHART of case at Eaglesmere.





abdominal pains; temperature, 104; discharges of blood and mucus from the bowels, not attended with tenesmus. The doctor is quite certain this blood did not come from the vagina, though she said the menses appeared in the night. Her brother states that during the early part of the disease the pulse was an inflammatory one; the tenderness was general over the abdomen, though the record says specially: "Right iliaë;" that no rose spots or sudamina were found or looked for. The condition of the abdomen from constant fomentations precluded their discovery. They might have been found in other localities. Under date of 25th the record states: "Peritonitis much better." My opinion is both from the record and the statements made by both doctors that the case was considered and treated as one either of peritonitis or enteritis until the time when yellow discharges from the bowels took place, and these were considered to be the typical ochre-colored ones of typhoid.

It seems to me from all the evidence that this early abdominal condition was not meteorism of typhoid but an inflammatory one; and peritonitis is an incident of the later, not the early, stages.

*Third.* Under date of the 11th instant, Mr. Kirk writes me as follows: "She is pretty well and they expect to remain next week. Did you ever hear of a case of typhoid getting well in so short a time?" I may say so rapid a getting up is remarkable. Mrs. Kirk informed me that it was generally considered by the ladies of the house to be a case where bathing at an imprudent time was followed by serious consequences. It is true that this is not uninterested testimony, and how far it should weigh as against the statements of the professional attendants is a matter for consideration.

Why did I not visit the case and decide from personal observation? First, my orders were to "investigate the sanitary condition of the house and grounds." Second, at the time of my visit—the 8th instant—she was considered convalescent, the temperature being normal from the 5th, and the time for discovering diagnostic signs was passed. I much preferred a record of the case with temperature chart to a visit.

II. If it was a case of typhoid fever, was there any condition in or about the house to produce it? The young lady had been there three weeks when taken ill. She had come from a healthy section of Philadelphia. A large number of guests had been in the house during the season and none others had been affected. It was not known at the time that there had ever been any case of typhoid in the house, though a case occurred last year at the Allegheny house, and a servant girl working there went home some miles distant and infected her whole family, one of whom died. The family lived in great filth, was destitute, and received no professional or neighborly care. Since returning I have received a letter from the doctor which establishes a connection between the Allegheny house and the Lakeside. I transmit this letter, marked "C."

When I saw the premises at Lakeside there appeared to be nothing to criticise, but this did not represent the condition just prior to my visit or at a time when the young lady must have been infected. On the back side of the house, toward the lake, a two-story water closet is built in close proximity to the kitchen, the base of which is connected with the base of the kitchen chimney by a large zinc pipe. It was asserted by the doctor and denied by Mr. Kirk, that the joints of this pipe were imperfect. As it was entirely disconnected at the time of my visit and the aperture of the closet and also of the chimney closed, I could not determine the question at issue. The closet had been conducted upon the earth-closet plan, having a large box or drawer to receive the deposits. Here again there is a contradiction of statement, the brother saying the amount of earth used was only a few shovelful daily, taken from the dust of the road, while Mr. Kirk says it was used freely—in abundance. When I saw it the box and excrement had been removed and the pit and sides freely served with lime and carbolic acid and the doors tied up. A two-story covered veranda extends around the back side and one end of the house, and the closets are approached by doors on each floor of the veranda. This is apparently not only convenient but safe, but its safety depends upon three distinct conditions, namely: That the joints of the closet structure, pipes and junction with the chimney be tight; that the kitchen range has a good fire in it at all times, and that the closet doors be kept tightly shut. A failure of either of the first two might result in filling the lower part of the house with gases, and a failure of the third would allow the gases to pass out through the doors and be wafted back and forth under the roof of the veranda and seek entrance to the rooms through open windows. I advised the entire abandonment and purification of this closet and the building of one at least fifty feet away from the main building, having large ventilating tubes through the roof. The earth-closet principle seems the only safe one at this place. The soil is too shallow to bury sewer pipes, being only about two feet deep, and the declivity is towards the lake, which must be kept free from contamination. I, therefore, advised the earth-closet system; the box or drawer to be tight, lined with coal tar; chamber slops as well as excrement to be deposited in it, a sufficient quantity of earth to be used to absorb all liquids, and the box to be taken out at midnight of each twenty-four hours and to be carried away. I also recommended the same system to Mr. Gamble, the secretary and treasurer of the company that owns the lake and the surrounding grounds, the attention to the closets to be considered a part of the daily administration of the house and faithfully attended to.

It was first proposed when it was decided that the young lady had typhoid that the infection came through milk, but Mr. Kirk showed that he had taken every precaution to get it from healthy stock, that his preparations for keeping it were good, and that his cel-

lar was cleanly. Next it was attributed to gases from the closet. This he endeavored to remedy by abandoning and building a new structure fifty feet away. Now, it would appear as though the infection, if any, might be traced to the servant who was in the house last year; but, taking into consideration the history of the case and the fact that though the house had been full of guests up to as late as August 25th, with no other person affected, it may be well doubted if it was typhoid, unless it should appear that some who have gone away developed the disease.

I have asked Mr. Gamble for some facts in reference to Eaglesmere, and he has very kindly furnished them. I send his letter, marked "E."

["B."]

**History of Case Reported by Attendant Physician.**

The patient was a young lady aged twenty-five years.

General condition—delicate; subject to stomach troubles.

Present condition—August 12th, 13th and 14th, complained of malaria.

On the afternoon of August 15, had a rigor, followed by temperature of  $104^{\circ}$ . There were several passages of blood and mucus from the bowels, but no tenesmus; there were cramps in the abdomen which increased during night; menses appeared in the night. The treatment was opiates and hot fomentations.

August 16, feels better—temperature  $99\frac{1}{2}$ . During the afternoon sharp lancinating pain in abdomen; opiates and fomentations continued. Bowels moved at 12.30 A. M.

August 17. Pain severe, temperature 101; pain very severe at 11 A. M., when temperature was found to be 103, considerable flatulence; gave saline laxative and continued the hot fomentations; 10 P. M. bowels freely moved several times; at 11 P. M., gave opiates, tenderness in right ilia.

August 18. Tympanites, passes large quantities of flatus, abdomen swollen and tender especially in right ilia. Pain controlled by opiates, fomentations continued.

August 19. Abdomen much distended, tympanites except in right ilia where it is dull; tongue shows heavy white fur on dorsum with red tip, opiates by mouth and rectum q. s.

August 20. During the last two days extremes of temperature have not been at the morning and evening observations, decided evening remission, seems brighter, 12 gr. quinine produced cinchonism, opiates and fomentations continued.

August 21. Abdominal distension increasing, quinine, opium and poultice continued. Diet from first has been liquid; begins to take on a typhoid type; tongue dry, pulse has lost its tension, starts in her sleep. Talkative delirium from which she is easily aroused.

August 22. Respiration during night jerky and irregular, (approach-



ing Cheyne-Stokes). At day-break pulse became gaseous, lips colorless and face livid in spots, mind clouded. 'Lies flat on back except when turned over, irritative cough during night suggestive of hypostatic congestion. This alarming condition was relieved by ammonia, brandy and hypodermic use of digitalis: gradually rallied during the day, continued the use of digitalis and increased the amount of stimulant, lessened the amount of opium, ordered emulsion of turpentine gtt. x every three hours.

At this date she was seen in consultation with Dr. Geo. D. Wood of Muncy.

August 23. Abdominal distension increased; is flighty, nervousness increasing, picks at bed-clothing and tries to catch objects floating in air. Treatment same.

August 24. Bowels spontaneously moved in spite of opium, the character being that of a milk diet. This is the first movement since 17th. Later in the day a large fecal movement followed by lowering in temperature (see chart) and diminution in size of abdomen. During the early part of night a third bowel movement, loose and watery.

August 25. Passages were for the first time typical of typhoid fever, ochre-colored and speckled, several to-day; face is dull, picking at bed-clothes and almost constant delirium, talking or muttering; peritonitis much better; no spots have been noticed. Poultices have been continued as well opiate, turpentine discontinued. To eliminate any malarial element full doses of quinine were ordered (20 grs) this was continued four days (see chart).

August 27. Abdominal symptoms better, nervous symptoms worse, constant delirium, not easily roused. Bowels moved three times, same character (ochre-colored), ordered bismuth mixt.

August 28. Abdominal distension much less, fullness in right ilia, bowels movement same and several of them.

August 29. Bowels still loose; reduced quinine from (20 grs. to 6 grs. other treatment same. Delirium not so active.

August 30. One ochre-colored passage, abdomen almost natural, but little irritation from this source, delirium is giving place to somnolence.

August 31. Conditions not changed.

September 1. Mind clearer, delirious at times. Bowels moved twice.

September 2. Seems better but much exhausted, still has an opiate once or twice a day. Poultice discontinued.

September 3. Improved, bowels still loose, discontinued the bismuth mixt.

September 4. Mind seems clear. Bowels moved twice.

September 8. Continues to improve bowels not moved since the 6th.

Since writing the above I have learned from the patient that she was not feeling well for over a week before she was taken ill.

[“C.”]

EAGLE'S MERE, *September 10, 1886.*

DEAR DOCTOR: Yesterday afternoon I heard some facts in reference to the cases of typhoid fever at Eagle's Mere last summer and this morning I investigated them, they are as follows:

Last August a woman who had nursed her brother with typhoid fever came from there (a small place called Oaklands) to the Allegheny house, she had only been there a week when she broke her leg, and soon after developed typhoid fever. One other case at the Allegheny had the fever, a servant. One of the servants from the Allegheny came to Lakeside. She was not feeling well at the time and soon became so ill that she was moved from the fourth story to the room in the second story next the closet. She was at Lakeside two weeks, during which time she says her bowels were loose, she was taken from there to her house, and from her all the family took the disease and one died. The family consisted of seven or nine persons.

The cases at the Allegheny were all among the servants and I find that the servants and guests used different closets.

I have not been able to find where the bedding used by this girl is, but am told it was not destroyed and is in use.

In my report last night I forgot to state that my patient had been here twenty-three days before her illness.

Respectfully yours.

[“E.”]

EAGLE'S MERE, PA., *September 13, 1886.*

E. D. PAYNE, M. D.

DEAR DOCTOR: Yours of 12th received and so far as I am able I answer. The Eagle's Mere Land Company, of which I am secretary and treasurer, own the lake and the land all around it for a distance of 1,000 feet from its margin. The lake is a mile long and half mile wide and its area is 117 acres and 77 perches. Our wells are drilled to a depth of from 50 to 80 feet and then the supply of water is abundant. The rock is generally within two feet of the surface and the drill generally goes through a rock bed nearly all the distance down. The character of the rock is trap and I am creditably informed that its dip or inclination is away from the lake. The character of the soil differs at different points around the lake. At places is sandy, at others gravel, at others composite, which is very fertile, and at others it is clay.

As you are doubtless aware our elevation is 2,196 feet above tide and we are surrounded by forests for miles in extent. I have kept the temperature this summer and my record shows maximum heat, July 7, 87° and minimum, August 5, 63. In July only three days of rain. In August three days of rain. The thermometer has never been known to go higher than 87°. The atmosphere is peculiarly dry and invigorating and we have a constant breeze.

Yours truly,

JAMES M. GAMBLE.

**XII. REPORT ON THE POLLUTION OF TOWANDA CREEK.**

By E. D. PAYNE, M. D., *Medical Inspector.*

TOWANDA, PA., *September 14, 1886.*

BENJAMIN LEE, M. D.,

*Secretary State Board of Health:*

SIR: I have to report that, in obedience to your order of the 10th inst., I proceeded, on the 11th inst., to the tannery of Procter & Hill, situated in Monroe township, on the main branch of the Towanda creek, about five miles above the point where it empties into the Susquehanna river, and about three miles above the borough of Monroeton. Mr. J. A. DeVoe, the superintendent, gave me every facility for making the inspection, and furnished me with such information as I desired.

The tannery has a capacity of 350 hides per day. They are Calcutta hides and manufactured into sole leather. No upper leather is made at this tannery.

Your order contained two points: First, does the refuse liquor from the tannery flow into the Towanda creek? second, is this "poisoned refuse?"

To the first point, I report yes. The washings from the tannery flow through a more or less open drain to the creek, a few rods distant, at a point where there is something of an eddy, the bottom covered with large cobble stone, among which, at times of low water (as when I saw it), is retained a considerable quantity of slime. At times when the creek is high this slime is washed away and carried with the current down the stream. The amount of drainage is as follows: The contents of two soaking vats, each 4×7×9 feet, once a week; three acid vats, each 4×7×4 feet, every day; two clear water vats, each 5×9×4 feet, every day.

In reference to the second point, it may be stated that when the hide is put into the soaking vat it is thickly coated with a mixture of lime, saltpetre and salt. After soaking for a week, it is transferred to the mill, which works off, under a stream of water, the hair and epidermis, which is caught and carefully preserved for other purposes; but with all care a greater or less quantity of refuse is carried off by the stream of water and flows on to the creek. This is shown by the condition of the creek at the point of exit of the drain. The hides are then transferred to the acid vat. In these three vats about five gallons of sulphuric acid are used daily, and they are emptied every twenty-four hours. From the acid vat they go to one containing only tan-bark (hemlock) or extract of it. At last they come to a vat where a constant stream of water washes away adherent, but not absorbed, tan-bark solution. This completes the process so far as liquids or

chemicals are concerned. Mr. DeVoe tells me there are no other materials used than those mentioned above.

These washings are carried by the drain to the creek, and thence with the stream to the river.

It is common observation that the creek is often highly colored by the solution, and common remark by the people along the banks that the water of the creek is often unfit for washing or bathing purposes, on account of the color and slime. Water wells situated near the creek are said to rise and fall coincident with the rise and fall of the creek. It is said fishes are no longer plentiful in the creek. Other causes might contribute to this result, and fishes are found in certain portions of the stream.

It is also well known that foreign hides are sometimes diseased and produce malignant pustule on persons handling them. In rapid handling they may not be detected, and the only knowledge a person may have that he has handled one is from the appearance of pustule. The washings from these hides must flow in common with those from sound ones.

In view of the above facts, I am of opinion the Towanda creek is contaminated by the drainage from the tannery of Procter & Hill, and consequently said drain is a nuisance. So far as odors arising from the tannery are concerned, it may be said they could not be considered harmful, and would only affect the men and their families who work in the tannery.

It is but just to state that the stream seems of vital importance to the business of tanning at that place.

TOWANDA, PA., *September 22, 1886.*

SIR: I beg leave to supplement my report of inspection in the case of Procter & Hill by the following facts:

On the 20th inst., I inspected three wells situated near the bank of the Towanda creek, at the request of Dr. W. C. Hull, of Monroeton.

No. 1. Well situated on premises occupied by W. J. Mason, fourteen feet deep, about one hundred and twenty feet from the bed of the stream, and about two miles below the tannery. Well rises and falls coincident with the rise and fall of the creek. Soil, gravel. Cellar about ten feet distant, in good condition, clean and sweet. Well had been cleaned within two months. Privy vault about seventy-five feet away, on lower ground. Not able to find any cause for contamination except the creek. Water—general appearance clear; odor, offensive; one drop of a solution of nitrate of silver (grs. x to the ounce) produced a dense white precipitate; one drop of Nessler's solution produced a yellow precipitate (not changing to brown) and stained the test tube. No special sickness is reported at the house.

No. 2. Well situated on premises occupied by P. Northrop, fifteen feet deep, one hundred and twenty feet from the bed of the creek.

Soil, gravel. Water, odor offensive, but gives no decided reaction to tests. The well is situated about ten feet from the kitchen door, has a slop hole near it, suggesting that persons stood in the door and threw slops to this spot. This is a driven well, and the foul slop hole probably accounts for the offensive smell of the water.

No. 3. Well situated on premises occupied by Amasa Davids, in Monroeton, about three miles below the tannery, fourteen feet deep, about one hundred and twenty feet from bed of the stream, privy vault about fifty feet distant, on lower ground, not in line with well, and beyond it from the creek. No apparent cause for contamination except the creek. Water, odor not marked; one drop solution of nitrate of silver produces a white precipitate; one drop of Nessler's test produces a yellow precipitate, stains the test tube, does not turn brown. At this house there has lately been a severe case of illness—gastro-intestinal irritation, accompanied by pain, loose discharges from the bowels, discharges of mucus and portions of the membrane of the bowels (Dr. D. N. Newton, Towanda, Dr. W. C. Hull, Monroeton). Dr. Newton is of opinion that at least part of the difficulty was due to a medicine she had prepared and taken. She is of a weakly habit of body, and was not strong when she went there to live. There is no evidence that other members of the family have been similarly affected. I tested each specimen for tannic acid, but found none.

I found general complaint against the odor arising from the creek in warm weather, and general expressions of regret that I could not make an inspection at a time when the tannery was in full operation, it having been in "shut down" since prior to my first visit.

I found two wells contaminated to such an extent as to be unfit for use in localities where there was no other known cause than the creek to produce it, and I think it may be inferred that others might be found if sought for.

Very respectfully,

E. D. PAYNE,  
*Inspector Lycoming District.*

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TOWANDA, PA., *October 12, 1886.*

BENJ. LEE, M. D.,

*Secretary State Board of Health, Philadelphia, Pa.:*

SIR: At the request of Dr. W. E. Hull, of Monroeton, I forward you these affidavits in the case of Proctor & Hill, as per endorsements. I do not consider they add anything to the case or not already covered by my report. Upon receiving them I requested Dr. Hull to furnish me with specimens of water taken from the creek and from wells above and below the tannery. The result of these examinations was negative. The tannery not being in operation at the time. I there-

upon advised him to let the matter rest for the present, as I had reported it, but he preferred the affidavits be sent, and I forwarded them.

Very respectfully &c.,

E. D. PAYNE,

*Inspector Lycoming District.*

*Bradford county, ss:*

Personally appeared before me, a justice of the peace, L. C. Salisbury, a reputable citizen of Monroe township, Bradford county, Pa., who, being duly sworn, does depose and say that the vat liquor which is discharged into the Towanda creek from the tannery of Proctor & Hill has, to his personal knowledge, killed nearly all the fish in said creek between Greenwood and Monroe borough, a distance of nearly two miles.

L. C. SALSBURY.

Sworn and subscribed before me this 20th day of September, 1886.

D. M. HINMAN,

*Justice of Peace.*

COMMONWEALTH OF PENNSYLVANIA, }  
*County of Bradford,* } ss:

In the matter of the pollution of Towanda creek by the waste vat liquor from the tannery of Proctor & Hill, at Greenwood, Bradford county, Pa.: On the 21st day of September, 1886, personally appeared before me, a justice of the peace in and for said county, Watson C. Hull, M. D., a resident of Monroeton, Bradford county, Pa., a reputable physician and entitled to credit, who being duly sworn, declares in relation to the aforesaid case as follows: That he has lived near Towanda creek, two miles below the tannery of Proctor & Hill, for the period of nearly sixteen years, that he is perfectly familiar with that portion of Towanda creek whose waters are polluted by the water from the waste vat liquor and hide washings of said tannery. That to his personal knowledge the fish have been nearly all killed in Towanda creek between Greenwood and Monroeton by said pollution of Proctor & Hill tannery. That many of the wells along the creek have at times become so polluted that their waters have become unfit for use by reason of participating in the putrid odor and flavor of the polluted creek water. That he has frequently had cases of gastrointestinal irritation arising from the use of said polluted well water. That this season he has had one case of sickness arising from the use of this polluted well water which came near resulting in death. That this nuisance has long been endured by a suffering people because they could see no way of abating it until the establishment of a Board of Health.

WATSON C. HULL, M. D.

*Bradford county, ss.* Subscribed and sworn to before me at Monroeton, Pa., this 21st day of September, A. D. 1886.

N. S. RHINEVAULT, J. P.

STATE OF PENNSYLVANIA, } ss:  
*County of Bradford,* }

Personally appeared before me, a justice of the peace in and for said county, David Mason, a resident of Monroe township, Bradford county, Pa., who, after being duly sworn, says in relation to the waste vat liquor and hide washings from Proctor & Hill's tannery, at Greenwood, Pa., that he lives near Hawes' toyshop, in said township, and has had to use the creek water for his stock for a number of years. It has given one of my horses colic and I am satisfied that it was caused by the polluted water, as the symptoms were different from that of ordinary colic. I know of two wells that have had to be abandoned on account of the leakage of the polluted water from the creek, the color of the water in the wells was that of the tannery liquor. One of these wells was about six rods from Hawes' mill pond and one of them was about six rods from the banks of Hawes tail race. I have seen many dead fish and many more that were dumpish on account of the putrid water or vat liquor or washings from the hides from the said tannery. I know of several wells that the water is polluted and the taste and smell of the water is the same as the water in the creek, which tastes and smells like the tannery.

DAVID MASON.

*Bradford county, ss.* Subscribed and sworn to before me at Monroeton, Pa., this 22d day of September, A. D. 1886.

N. S. RHINEVAULT, *J. P.*

### XIII.—REPORT OF AN INSPECTION OF FOUL SLAUGHTER HOUSES IN THE BOROUGH OF BRADDOCK.

BY L. H. HUNTER, *Inspector.*

PITTSBURGH, *August 30, 1886.*

BENJAMIN LEE, M. D.,

*Secretary State Board of Health:*

DEAR SIR: In pursuance of order of June 24, I visited and inspected, on the 28th day of August, 1886, the respective slaughter houses of Joseph Walters, Robert Cunningham, Franker Strattman & Co., Adam Apple, Joseph Ebbner, Lytle & Arras and W. H. Walkel & Co's. fat-rendering establishment. These concerns are all situated together and occupy a frontage of two hundred feet, by actual measurement, on the Monongahela river, in the borough of Braddock, Allegheny county, Pa. Being in the town proper they are surrounded by a heavy population. I find that one and all of the above-named slaughter houses are violating section 3 of the provisional regulations of State Board of Health, in that they have thrown and still are

throwing offal—such as heads, paunches, entrails and other parts of animals—from the back part of their buildings in chutes constructed for this purpose, on the bank of the river to fester in the sun or be carried off in times of a freshet or high water. I noticed while standing on the bank that large quantities of partly decayed offal were washed up from the river, upon the shore, by every passing boat. Outside of this fact the shore in front of these slaughter houses is literally polluted with offal in an advanced stage of decomposition. In fact this particular spot throws Beck's run in the shade and nearly beggars description. These two places have, in my opinion, contributed largely to the impurity of the Monongahela Water Company's supply, an analysis of which was sent you. But I am diverging from my subject and must come back to Braddock, as I wish to incidentally touch on the fat-rendering establishment of W. H. Walkel & Co. This is a dual firm, or firm within a firm, composed of W. & H. Walkel and John Strattman who is a hide dealer. Frame building of fair proportions, set up on posts about ten or twelve feet from the ground. One large wooden tank, where the boiling of old fat and butchers' offal is carried on, with some smaller kettles for rendering tallow. Underneath this building the earth is reeking with the drippings, and about the center is a pit or sink hole full of a dark colored liquid of a very offensive smell, which the employés called a little salt water mixed with the drippings of the salted hides. I would call it the Simon-pure essence of half rotten offal. When this pit overflows it is carried off into the river through a small drain. And I do find to wit: That the above mentioned firm are violating section 3 of the provisional regulations State Board of Health, in that they allow offensive or deleterious odors and gases to escape from boiling tank via large pipe, thence into the chimney and from there into the open air. "prejudicial to public health." And I do furthermore find that at a distance of several hundred feet the odor from this tank, which is a peculiar and very offensive odor, easily perceptible above all the other disagreeable odors of this locality, is one that I would be willing to stake my reputation as a sanitary expert would hold out with equal force and volume for at least one square mile.

The following is one of seven orders served upon the proprietors of the above establishments :

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *September 27, 1886.*

To Mr. JOSEPH WALTERS, borough of Braddock, Allegheny county, owner, agent or occupier of premises situated on the banks of the Monongahela river, in the borough of Braddock: You are hereby notified and required to abate and remove within ten days from the date of the service hereof, a certain nuisance on the above-described prop-



erty, consisting of improper arrangements for conducting the business of slaughtering, whereby deleterious refuse matter is deposited in and pollutes the Monongahela river, which nuisance has been declared to have a tendency to endanger and be prejudicial to the public health. On failure to do and perform which, suit will immediately be entered against you agreeably to the provisions of the act of Assembly.

By order of the State Board of Health of Pennsylvania.

BENJAMIN LEE, M. D.,  
*Secretary and Executive Officer.*

*The Act of Assembly*

Confers upon the State Board of Health "power and authority to order nuisances or the cause of any special disease or mortality to be abated and removed." Any person who shall fail to obey or shall violate such order becomes liable to a fine of one hundred dollars for each such neglect or violation.

Served October 6, 1886, upon Joseph Walters, owner, agent or occupier of the within-described premises, by William H. Mymard, chief of police, borough of Braddock.

In order to effectively abate and remove the nuisance herein referred to, it is

*Herby Ordered*

That in accordance with sections two and three of the provisional regulations of the State Board of Health, you no longer cause or permit offal, or the entrails, paunches, heads or other parts of any dead animal or animals, from your establishment to be deposited in or near the Monongahela river or any of its tributaries, and that you observe sections twelve, thirteen and fourteen of the regulations, in the management of your establishment.

BENJAMIN LEE, M. D.,  
*Secretary and Executive Officer.*

**XIV. REPORT OF AN INSPECTION OF A BONE BOILING ESTABLISHMENT AT LIMERICK, MONTGOMERY COUNTY.**

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By WILLIAM B. ATKINSON, *Inspector.*

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PHILADELPHIA, *September 9, 1886.*

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer, State Board of Health :*

DEAR SIR: In response to your instructions, I visited, on this day, the township of Limerick, Montgomery county. Jacob Finley's place, the one against which complaint had been made, is situated about one mile to the east of the place, and about one-half a mile north of the railroad. He boils the carcasses of dead animals in an open boiler, and make no effort at any form of machinery to carry off the effluvia. The gases escape into the open air, and the tallow runs beneath, with the waste running down the declivity and sinking into the ground.

What little offal there is, is thrown in a pile on the ground. He is engaged in making fertilizers with phosphates, &c., mixed with ground bones. At the time of my visit, he was not in very active operation. The flow from the place sinks into the ground and would have to run quite a distance to pollute the river. Wells are used by the people for obtaining drinking water, and there was no evidence of any contamination of these.

As this place is so little of an annoyance, and its distance so decided from any largely built up place, I cannot urge any particular action in the premises. I suggested care as to the use of disinfectants, etc., and left with Mr. Finley a copy of the report on "disinfectants."

He assured me that he would not permit any neglect to cause annoyance to any one.

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**XV. REPORT OF AN INSPECTION AT ROSEMONT.**

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By WILLIAM B. ATKINSON, M. D., *Inspector.*

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PHILADELPHIA, *August 26, 1886.*

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board of Health :*

DEAR SIR: In obedience to your instructions of August 25th, I this day visited Rosemont and carefully examined the premises of William Callanan, butcher. I found everything in proper order. There was not even the usual odor of such places, and I could not find the slightest ground for complaint. I am satisfied that he is very careful in reference to everything in connection with his premises.

The place of William Molden was in its usual untidy condition. He received me very pleasantly, and assured me that he was about to clean up, and that it should be done immediately, and would do his best to keep things in proper condition in future. I deemed it proper to request his family physician, Dr. Lindsay, and his nearest neighbor, William Callanan, to look after him and keep him up to the mark. I cannot see that any advantage would be gained by further action of this Board at the present, and unless some very decided cause of complaint is permitted.

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#### XVI. REPORT OF AN INSPECTION OF WEST MANAYUNK, MONTGOMERY COUNTY.

By WILLIAM B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, November 20, 1885.

BENJAMIN LEE, M. D.,

*Secretary State Board of Health:*

DEAR SIR: In accordance with your instructions, I visited, during the week ending 14th instant, the locality known as West Manayunk, in Montgomery county, from the neighborhood of the Pencoyd Iron Works, along the Schuylkill river, up to the woolen mills of Messrs. Dobson.

At and around the iron works, after a most careful investigation, I found no drainage into the river save water used at the works which contained a small percentage of iron. There were no wells save those which were walled up in the usual way and cleansed by the process of the odorless excavator companies. Of course, waste water containing more or less small garbage was emptied by all the houses in this locality into the roads or drains, and would thus eventually find its way into the river.

The Ashland paper mill, operated by Mr. S. A. Rudolph, is on a small stream called Gulley's run, but a short distance from the river. No rags are used, the paper being made entirely from poplar wood. Mr. Rudolph very courteously escorted me through the establishment and gave me every opportunity to see the whole process of paper making. No excrementitious matter is allowed to flow into the river. All the water closets are wells, which are cleaned as above mentioned. The sole drainage into the run, and thence into the river, is a weak alkaline solution, with some lime grout and a small quantity of waste chlorine. The latter waste is reduced to the minimum by the best processes in order to avoid loss and additional cost in manufacture. Where the alkaline dark-colored liquor flows into the river, fish of good size may be seen swimming about, a strong evidence of the in-

nocuousness of the water. This mill is claimed to be worked on an economic principle of reclaiming and re-using ninety per cent. of the alkaline matter used in the process, which was formerly permitted to waste itself in the river.

All the tenement houses in the vicinity belong to the mill owners, and all have the ordinary wells, requiring periodical cleansing.

Just below this is an old mill belonging to the Dobsons, which is at present not used for any purpose.

The next place visited was Dobsons' "Rock Hill mill," situated on the same run, on Rock Hill road above Belmont avenue. The only waste here is from manufactured stock, commonly called shoddy dirt. This does not reach the stream, but is used as a fertilizer. In the process of cloth scouring and fulling chemicals are used, and the water loaded with these is settled in large ponds erected for the purpose. This is compulsory, in order to prevent the fouling of the water of the paper mill below.

There is no water closet of any kind that empties into this run, or in any way into the Schuylkill river. All the closets are like the above mentioned, and their contents are used as fertilizers for the neighboring fields.

The new Union mill on the river road is not running.

Thus it will be seen that at present none of the establishments in this locality are polluting the stream.

However, on my trips up the stream, by driving and in the cars, it could readily be seen that the time had passed for the Schuylkill river, at least some distance above the city of Philadelphia, any longer to be used as a source from which to draw water for the citizens to use for culinary or drinking purposes. On both sides may be seen abundance of sources of pollution, manufacturing establishments, graveyards, farms, residences, etc., each of which contributes a greater or less share. Nor is it possible by any means to lessen these causes to any considerable extent. Were everything shut off above the city limits, it alone, with the vast amount of work done upon its banks, with the river itself used as a common carrier down to the dam, would sufficiently destroy the value of the Schuylkill water for the household purposes of the people of Philadelphia. Although much is expected from the completion of the intercepting sewer, yet it is not reasonable to anticipate anything near complete exemption from pollution. The water of a great city should be obtained from a source as nearly beyond pollution as may be. Such source or reservoir should be solely used as a water supply.

In the province of this report, your inspector feels that he can only urge that the State Board of Health of Pennsylvania should use all its influence toward the utter and early abandonment of the Schuylkill river as a source from which to draw the water supply of Philadelphia.

**XVII REPORT OF AN INSPECTION OF A FOUL PIGGERY AT  
EAGLE, CHESTER COUNTY.**

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By WM. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, August 4, 1886.

BENJ. LEE, M. D.,

*Secretary and Executive Officer State Board of Health :*

DEAR SIR: In response to your instructions of August 3, I visited, on this day, the premises of John Quigley, in Tredyffin township, Chester county, near Eagle Station. I found that he had between forty and fifty pigs, which were fed upon slops or garbage hauled from a neighboring hotel. At the time of my examination, the pigs were in an enclosed lot, which gave them abundant room. Adjoining this were the box pens with troughs for feeding, which were comparatively clean; one box, however, was sufficiently dirty to demand an extra cleansing.

I next visited the people of the neighborhood, and learned from them that this was the third summer that they had been annoyed by this piggery. Colonel Baker, half a mile away, Wm. Cox, Wm. Owens, Daniel Ward, Mrs. Jebron, Mrs. Wilde, Mrs. Lewis, Mrs. Morrison, Mrs. McElroy, Dr. Clark and many others expressed themselves in the same terms, that when the garbage was brought to the place morning and evening the odor was sickening. Mrs. Clark was rendered very sick at the stomach on several occasions, and for fear of inducing hemorrhage to which she is subject was compelled to abandon her out-door sittings. These neighbors were located within a radius of three-fourths of a mile.

In driving along, I occasionally caught a whiff of the odor, which was quite offensive, although at that time the barrels were empty, and the place had evidently been cleaned within a short time. I can readily understand what must be the odor when these troughs and barrels are filled.

I would recommend that the utmost cleanliness and care be demanded of the owner of these premises, and the free use of disinfectants at all times, as it is out of the question that feeding slops and garbage obtained from hotels can be otherwise than extremely offensive.

**XVIII. REPORT OF AN INSPECTION OF A SLAUGHTER HOUSE AT  
HULMEVILLE, BUCKS COUNTY.**

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By WM. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, August 2, 1886.

BENJ. LEE, M. D.,

*Secretary and Executive Officer State Board of Health :*

DEAR SIR: In response to your instructions, I proceeded to Hulmeville, on July 28, and inspected the slaughter house and surroundings of Messrs. Webster & Magill. They slaughter about four or five head of cattle and twenty-five head of sheep weekly. The slaughter house was comparatively clean, and the odor not great, although the weather was excessively hot. The boiler, of sixty gallons capacity, was an open one, and gave forth a moderate smell of boiling fat. The hide-curing house could not be condemned. The bone pile had but one head in it, and there was but little smell. Thus far, I found nothing to object to. But on visiting the pig pen in the rear of the slaughter house, I found it to contain about five or six pigs which were nearly belly deep in the muck and offal which was lying in decomposition in the pen.

I would recommend that the piggery be at once removed, and the ground thoroughly cleaned and disinfected. Such action will remove all objection to the place.

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**XIX. REPORT OF AN INSPECTION OF SLAUGHTER HOUSES AT  
WEST NEWTON, WESTMORELAND COUNTY.**

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By L. H. HUNTER, *Inspector.*

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PITTSBURG, August 30, 1886.

BENJAMIN LEE, M. D.,

*Secretary State Board of Health :*

DEAR SIR: In pursuance of order of August 23d, I visited West Newton, Westmoreland county, Pennsylvania, on the 27th day of August, 1886, and inspected the respective slaughter houses of R. Zellers and James Means, situated on a run passing through the property of James A. Dick, deceased. Observed nothing of special note in said run on the premises of Mrs. Dick. Followed run up for a distance of about one-quarter of a mile, where the slaughter house of James Means is located on the bank of the run in a building 20×30 feet. Inside arrangement contains small furnace and open kettles, presumably used for rendering fat and boiling offal. Just outside of this building, and attached thereto, is a large hog pen with six large hogs. This pen extends over

a branch of the run, which diverges off from main run and comes into it again immediately below the slaughter house in question. Found Robert McLaughlin, an employé of James Means, with an assistant, killing a steer. The steer, being tapped on the head, its throat was cut, and the blood allowed to flow into small trough that emptied into larger trough in the above-mentioned pig pen. Propounded the question founded on section 14 of provisional regulations of State Board: Did you, or any one for you, distribute, twice each week, during the months of June, July and August, twenty-five pounds of chloride of lime about your premises? Answer: I did not; didn't know that it was required. How many beeves do you kill here per week? Answer: Three steers and some small animals, like calves, sheep, &c. Building has tight board floor. There is no doubt but that a large amount of offal and blood that is thrown to the hogs and not eaten by them, together with the manure of the hogs, at each dashing rain and rise of the run, find its way in the main run that passes through the Dick property. A quarter of a mile farther up the run found the slaughter house of R. Zellers, with similar arrangements to first described premises, with the exception that there were no hogs about and the blood and offal were escaping directly into the run. Two large open kettles are used here for boiling bones. Mr. Zellers or none of his assistants being about I could not ascertain this fact definitely.

#### Remarks.

Mrs. Dick was absent from home. Found a young man at Dick's bank, who said that Mrs. Dick would have been glad to have seen me and explained some matters in connection with the case. He appeared to be familiar with the creek or run and slaughter houses, and was very affable and polite, but did not offer to accompany me or send any one with me, I suppose he thought a State Board Inspector would be guided by instinct. After supper I held a consultation with a committee of council that happened to be meeting that night. Gave them Model Ordinances of State Board and advised them to organize a local board of health. They promised me to do so at their next meeting. West Newton is a fine town with several thousand inhabitants. They have had typhoid fever there. I did not hear of any cases in the town proper, but there were some bad cases out the road in the direction of the slaughter houses before mentioned. George W. Washabough is burgess of council, a few lines from you to him would stir up sanitary matters there. I find when I send Model Ordinances to members of town councils that they read them, think they are just the thing and pass them round to their friends and neighbors as they would Sunday school or temperance tracts.

**XX. REPORT OF AN INSPECTION OF A FOUL STABLE AND DAIRY  
AT MOUNT OLIVER, ALLEGHENY COUNTY.**

By L. H. HUNTER, *Inspector.*

PITTSBURGH, *August 26, 1886.*

BENJAMIN LEE, M. D.,

*Secretary State Board of Health :*

DEAR SIR: In pursuance of the order of August 23, I this day visited and inspected the dairy stable of John Heinen, Charles street, Mount Oliver, Lower St. Clair township, Allegheny county, and, in my judgment, the stable complained of and surroundings constitute an unmitigated nuisance. They are, in brief, these: First, the stable or shed is 40 feet in length by 14 in width, and 7 feet in height—i. e., there is a tight floor or ceiling, above which is the hay-loft. Board floor laid flat on the ground, little or no ventilation, and in a general filthy condition; contains thirteen milch cows. The air was so heavy and the stench so villainous that I made no extensive notes of inside surroundings, but hastened to the outside world, where I carefully and prayerfully contemplated it from a safe distance. I think an order somewhat like this would fit the case: "You are hereby ordered and directed to tear down, burn, or blow up aforesaid stable; disinfect and fumigate the ground; rebuild a new and larger stable, with floor raised from ground, or forever quit the business." The nuisance of M. Hirtz, Southern avenue and Knoxville borough, I think will be abated without further proceedings on part of State Board. He has promised to comply with a written order I gave him to remove his factory, and quit killing animals in his present whereabouts and go out of Knoxville borough in five days from date. If he does not do so so, I will report same at expiration of allotted time. In the dairyman Heinen's case, I will say that there are a combination of nuisances outside of his own particular nuisance. It being thickly built up with houses, the drainage from this stable, also from other stables, one large bottling house, and two or three privy vaults are allowed to genily meander diagonally through the boroughs of Mount Oliver and Knoxville. Both places had a touch of typhoid fever, with some fatal cases. Borough council of Knoxville are organizing a local board of health, and will adopt the Model Ordinances of State Board. A word from you about this drain or the necessity of a sewer would be of great service. The clerk of the borough is Mr. W. W. Knox, Jr. Post-office address, 521 Liberty street, Pittsburgh, care of John A. Williams.

P. S.—The Monongahela Water Company have cleaned one water basin, and will clean the other next Sunday. They are also constructing the sewer that was ordered to be made by Health Officer Crosby Gray.



**XXI. REPORT OF AN INSPECTION AT NEW CASTLE, ALLEGHENY COUNTY.**

By **L. H. HUNTER**, *Inspector*.

PITTSBURGH, *September 3, 1886.*

**BENJAMIN LEE**, M. D.,

*Secretary State Board of Health :*

DEAR SIR: Yesterday I went to New Castle and made a thorough examination of the nuisance complained of to the State Board.

I found that the nuisance complained of consists of stagnant, filthy water, covering an area of about 250 feet in length, and an average of about 2 feet in width, situated on Cochran alley and South street, a thickly populated portion of the city. It is a terrible nuisance, and certainly should be abated at once. I learned that the Board was about to take action to abate the nuisance by the construction of a sewer from the nuisance to Shenango creek, a distance of 400 feet, the city engineer being of opinion that would be the effectual, and really the only way to properly or permanently abate the nuisance, his estimate of the cost being \$1,500; but the local board have been prevented from taking the steps desired on account of individual threats of councilmen and certain city officials that should the sewer be constructed, suits for damages would follow. In other words, there appears to be a conflict among those in authority; hence nothing has been done. Members of the board of health asked me for an opinion on the subject. I therefore consulted Mr. McFarland, attorney, of whom I made mention in my last letter to you; but before doing anything further, I write you for *instructions*. The local board want advice as to their powers immediately, and they will act accordingly.

**XXII. REPORT OF AN INSPECTION OF FOUL SLAUGHTER HOUSES IN HOMESTEAD, ALLEGHENY COUNTY.**

By **L. H. HUNTER**, *Inspector*.

PITTSBURGH, *September 21, 1886.*

**BENJAMIN LEE**, M. D.,

*Secretary State Board Health :*

DEAR SIR. In pursuance of order of September 13th, I visited and inspected the slaughter houses of George Ross and Howard Espey, situated in the borough of Homestead, Allegheny county, Pa. On the bank of the Allegheny river I find that they are in a similar condition to those of Braddock, which I reported you some time ago, and are violating section 3d of provisional regulations of State Board, in that they have been and still are polluting the shores of the river



*Cedar Ave.*

*West Ave.*

**PLAN  
OF  
SCHOOL LOT & ADJACENT GROUNDS.  
Jenkintown, Pa.**

*A — School House.  
B — Well.  
C — Present Privy.  
D — Proposed "  
----- Present Fence*

*----- Probable Future Fence.  
EF — Neighboring Wells.  
BD — 97 Ft. ED — 93 Ft.  
FD — 110 Ft.*

with offal, also, allowing the noxious odors of boiled offal to escape into the open air.

An order to comply with section 3 of provisional regulation, I think, would abate the nuisance.

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XXII. REPORT OF AT INSPECTION OF THE WATER SUPPLY OF  
THE JENKINTOWN SCHOOL HOUSE.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

PHILADELPHIA, July 26, 1886.

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board Health :*

In response to your instructions, I proceeded to Jenkintown, Montgomery county, and inspected the grounds of the public school. I found that the cess-pool was located thirty-five feet from the well of drinking water. At the time of my visit the school authorities had had the cess-pool cleansed and filled with fresh earth to within about three feet of the surface. They informed me that they were about to spring an arch over this well, and erect over it a cemented vault, which would require to be cleansed as occasion demanded, and could not become a source of contamination of the drinking water. The average attendance at this school is about 138 pupils daily. No sickness had been observed for several months, which could be attributed either to the cess-pool or the drinking water. As I found that this convenience could be placed at a far corner of the school lot without becoming a nuisance to the neighbors, and thus remove to a greater degree the objections incident to its presence, I would suggest that the school authorities be urged to make this change.

I append an examination of the well water, furnished me by J. W. Ridpath :

JENKINTOWN, PA., July 26, 1886.

DEAR DOCTOR ATKINSON: In reply to a request from you, through our clerk, I would say relative to the examination of the well water of the public school in 1884: I simply applied a few tests in a hurried and imperfect manner for my own satisfaction, because my children were attending school there, and I did not believe the water fit to drink. Two of the directors then talked of having the water tested. The record was made upon scraps of paper, some of which have doubtless been lost. From such as I found in one of my books a year after, the following memorandum was compiled and copied in a book kept for that purpose: Taste, not pleasant, persistent. Odor, unpleasant, resembling pond water. Chlorides, present, but not excessively

abundant. Organic impurities, as shown by potas. permanganate, considerable, as follows: Water, heated to  $180^{\circ}\text{F.}$ , 50 c. c., with 5 c. c. sulphuric acid. Permanganate solution,  $\frac{1}{1000}$ . Five drops of the solution gave color. One drop more added in ten minutes. Two drops more added ten minutes later. In one hour the *faintest* rose-tint was *just visible*. Total, eight drops to 50 c. c. of water to give the slightest possible tinge of color at the end of one hour.

STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *July 17, 1886.*

C. MATHER, Esq.,

*Member of School Board of Jenkintown.*

DEAR SIR: Your favor of the 15th inst. is received and contents noted. You say that "the matter objected to has never been proved a nuisance."

To this I would reply that one of the objects of a board of health is to decide upon the existence of nuisance, and that its decision is final until reversed by a competent court, and will always be so received by the State Board.

You say that "it is impossible for any filtration from the cess-pool to reach the well as the water-shed slopes to the north, while the well is some thirty feet south of the cess-pool." In answer to this I have to say that the surface water-shed, or slope of the ground, in no way affects the question of filtration, unless the cess-pool is sunk in a rock, the strata of which slope away from the well. In a leaching soil water will find its way in every direction no matter what the conformation of the surface may be.

You assert that "there is very little water in the borough better than the well in question, and much not near as good."

Is this assertion based upon a careful examination of the water by a competent chemist, as ordered by the State Board of Health, or simply upon your own observation?

If your own child were made sick by drinking it, it would not be much of a consolation to you that there was other water in the borough not so good. Water may be clear and sparkling, and pleasant to the taste, and yet be seriously polluted. If thoroughly cemented the cess-pool would, of course, cease to be a source of danger to the purity of the water, but if the soil is already saturated with filth it might be a long time before the water would again be safe.

Finally, I find myself quite unable to share your opinion of the composition of your board of health. I cannot imagine a better combination in a board of health than *doctors* and *ministers*. The members of these two professions possess, in an eminent degree, integrity, public spirit, intelligence, scientific attainment and a knowledge of

the laws of health. I only regret that there are not more boards of health in Pennsylvania similarly constituted and possessed of the same degree of energy.

I have the honor to be

Yours respectfully,

(Signed)

BENJN. LEE,

*Secretary.*

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XXIV. REPORT OF AT INSPECTION AT FERNWOOD, DELAWARE COUNTY.

By WILLIAM B. ATKINSON, M. D., *Medical Inspector.*

PHILADELPHIA, July 27, 1886.

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer, State Board of Health :*

In response to your instructions, I proceeded to Fernwood, Delaware county, on the 26th inst., and made a careful examination of the drainage of the village, its cess-pools, cellars, etc.

At the house of Mr. Buehler, Samuel Bartram, owner, on Baltimore avenue and Third street, I found a foul privy, with no outlet, the filth not two feet below the seat. This overflows and runs over the open ground. A gutter on Third street drains from the pump, which is about ten feet distant from the privy. This drain was stagnant and green with filth. This tenant is a baker and complains that the people refuse to buy his bread on the ground that it is made from foul water. His cellar was quite damp. There were five houses in this row, all the property of the same owner, and in a similar condition.

On Fourth street opposite the school house lives F. Bradley. His cellar was ankle deep in water. It is believed by Mrs. Bradley that there is a wooden drain which has been obstructed below. Mr. Vanfleet is the agent for this house. Next door is Joseph Dickerson; as the family were absent, I learned that his cellar was not so wet. The privy for these premises had been recently cleaned. The water of the well when pumped up was of a greenish yellow color, and could not be used. The house of F. Hopkins, same agent, had in the cellar an open drain running the length of the house, which contained at least six inches of water. W. Waddy next door, and Ford next, had both evidences of great dampness in the cellars. All had ill-smelling cess-pools and did not use the pump, but went some distance for water.

Barney Gallagher, cellar wet. Here I was informed that several of the children had been sick with chills.

George Stewart, cellar very wet. McIntire's cellar and the next

neighbor's were in one; water at least one foot deep. These are the last houses on the pike next to West Fernwood. The privy was filled to within one foot of the seat, and its contents were running over the ground. Boyd's house, cellar wet, and after each rain flooded. Among a number of others, I visited the house of Mr. Hoopes on Baltimore pike and, I think, Third street. Here the cellar was quite damp, if there was any form of drain, it was not apparent. The owner, Mr. Hoopes, admitted to me that there was no drain of any kind. His privy was quite foul and greatly needed cleaning, I was informed that a young man had been sick at this house, and had gone to New Jersey, at the suggestion of his physician.

Over the whole of this village, there is marked evidence of the worst form of drainage. The soil is mostly a very tenacious clay which holds the rain water and sewage, and as far as I could ascertain, very little effort had been made to construct sewers, or to prevent the contamination of the drinking water by the drainage from cess pools, etc. Very few of the privies were in a proper condition; being usually quite full, and the contents running freely over the ground, at least infecting the air if not the water. During the present season, when the houses are constantly open, but little sickness was prevalent, except some forms of bowel affection, which in all probability were aided, if not started, by the drinking water. I should apprehend however, at the approach of winter, a marked increase in low forms of fever, rheumatism, and the like.

The only possible means to obviate these difficulties will be the early construction of sewers, and the connection with them of terra cotta drains from each house. Much also may be done by the careful and present cleansing of the cess pools and the prevention of their contents from running over the surface.

I also visited West Fernwood, and was pleased to find that the drain south of the railroad, for the property of Mr. Bartram had been completed and was successfully carrying off the sewage of these houses, where formerly so much fever had been prevalent.

## APPENDIX E.

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### REPORTS OF QUARANTINE AND DISINFECT- TION.

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- 1 Report on the Observation, Quarantine and Disinfection of Japanese Rags, the cargo of the bark Lucy A. Nickles—Benjamin Lee, Secretary.
- 2 The Quarantine of Small-pox in the Port of Philadelphia—Benjamin Lee, M. D., Secretary.

#### I.—REPORT ON THE OBSERVATION, QUARANTINE AND DISIN- FECTION OF JAPANESE RAGS.

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STATE BOARD OF HEALTH,  
PHILADELPHIA, *February 16th, 1886.*

Dr. J. F. EDWARDS,

*Chairman Committee on Travel and Traffic :*

DEAR SIR : I desire the advice and coöperation of your committee in regard to proceeding against the consignees, owners or carriers of certain rags known as the Japanese rags which have been in due form pronounced a nuisance prejudicial to the public health, and which are now being conveyed into this State in violation of a resolution and order of the State Board of Health. I submit herewith the resolutions of the Board of Health of the city of Philadelphia, declaring them a nuisance and ordering their disinfection, and subsequently permitting their removal by water without disinfection and without breaking bale; also the evidence showing that, in defiance of the resolution of the Board passed at its regular meeting at Harrisburg, they are being surreptitiously introduced into the State by a circuitous route from a neighboring State, which evidence was obtained by a special agent whom I employed for the purpose. The documents herewith transmitted are :

A. The regulation of the Board in regard to the sanitary supervision of travel and traffic.

B. The notification of the State Board of Health to the Board of Health of Philadelphia of the approach of the cargo of rags with the subsequent action of the Board of Health of Philadelphia upon the subject.



- C. The resolution of the State Board forbidding their removal.
- D. The letter of instructions to the special agent to follow the rags to their destination ; and
- E. The report of the special agent.

I have the honor to be,

Yours respectfully,

BENJN. LEE,  
*Secretary.*

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**A. Regulation in regard to the Sanitary Supervision of Travel and Traffic.**

Upon satisfactory information of the approach to, or the transit through, the Commonwealth of Pennsylvania, of infected persons or goods, it shall be the duty of the Secretary, as Executive officer of the Board, to cause the same to be stopped at the State line, or, if found within the limits of the State, to cause such person or goods to be removed from cars, stages, vessels, boats, or other conveyances, and securely isolated and disinfected ; and he may, if, in his judgment, the emergency is such as to demand it, call a meeting of the Committee on Travel and Traffic, to which his action shall be submitted, with his reasons therefor, in writing. But, in cases coming under the jurisdiction of national or municipal quarantine authorities, he shall coöperate with said authorities in all such action.

**B. Action of Philadelphia Board of Health.**

October 24. Dr. Benjamin Lee writes the Board. Subject matter, Importation of suspicious Japanese Rags.

Lazaretto Committee report: recommend that, unless they, (the rags) be submitted to some process which in the opinion of the Board will render innocuous any disease-bearing germs or spores they may contain, the admission of these rags in Philadelphia be refused.

November 5. *Resolved*, That the bales of rags imported upon the vessel "Lucy A. Nickles," consisting of 4,910 bales, be permitted to be landed and be stored in Fitzpatrick & Pemberton's stores; that they shall not be opened or removed from said storehouses while they remain in Philadelphia, without the consent of the Board of Health, and that the consignees give their bond with surety or sureties, in the sum of five thousand (\$5,000) dollars to the health officer to comply with the above conditions.

November 10. *Resolved*, That the chief inspector be directed to detail an inspector to make daily inspection of the rags, and report daily.

November 24. Dr. Taylor was directed to make such report.

**Resolutions from Joint Committee.**

1. *Resolved*, That in the opinion of the Board of Health, the handling of rags without previous disinfection is a nuisance having a tendency to endanger the public health.

2. *Resolved*, That the rags imported from Japan in the ship "Lucy A. Nickles" must be disinfected before removal from or through the city of Philadelphia.

3. *Resolved*, That the rags must be disinfected in bulk, that is, without breaking the bale.

4. *Resolved*, That the process of disinfection must begin not later than December 15, 1885, and be completed by February 1, 1886.

5. *Resolved*, That the owners of said rags be notified of the above action and requested to present a plan of disinfecting for the rags to the Board within ten days.

December 8. *Whereas*, The importation of old rags into the United States has been the means of introducing small-pox and other contagious diseases; therefore be it

*Resolved*, By the Board of Health of the city of Philadelphia, that hereafter no rags from foreign ports shall be permitted to land at the port of Philadelphia until they shall have been disinfected to the entire satisfaction of this Board either at this port, or at the port from whence shipped.

*Resolved*, That the members of the American Public Health Association from Pennsylvania, now about to convene in Washington, be requested to urge upon the association the necessity of passing judgment upon the matter of the importation of rags; and that this Board respectfully asks the association to recommend the thorough disinfection of imported rags in every port of the United States before they are distributed for manufacturing purposes.

*Resolved*, That the chief clerk be directed to forward a copy of these resolutions to the president of the American Public Health Association, attested by the seal of the Board.

December 15. Joint committee reported and offered the following:

*Resolved*, That the plans for disinfecting the rags imported in the "Lucy A. Nickles," and now stored in Fitzpatrick & Pemberton's storehouses, submitted by the owners or consignees of said rags, are unsatisfactory, and are hereby disapproved.

*Resolved*, That the Board will approve of any plans by which all parts of the bales of rags shall be exposed to a temperature of not less than 300 degrees of Fahrenheit, or, by which all parts of the bales, placed in *vacuo*, shall be exposed to the action of a germicidal gas, i. e. or by which all parts of the rags while in the bales shall be exposed to the action of a germicidal gas after the withdrawal of the air.

January 19. *Resolved*, That in the judgment of this Board the said rags are, in their present condition, a nuisance, having a tendency to endanger the public health, and that the owners or agents thereof be notified to have the disinfection of the same by either of the above-mentioned processes completed by the first day of February next, the

work to be done to the satisfaction of the health officer and medical inspector, and upon failure of the owners or agents to comply with this resolution, the health officer is hereby ordered and directed to enter into contract with a competent party or parties to have the work done by one of the aforesaid processes.

January 26. Lockwood & McClintock ask permission to remove rags.

After discussion, the following resolution was adopted :

WHEREAS, This Board did, on January 19, 1886, declare the cargo of rags from the ship, "Lucy A. Nickles," to be a nuisance, having a tendency to endanger the public health; therefore,

*Resolved*, That the owners be permitted to remove said rags in vessels by water from the port of Philadelphia before February 1, 1886, but, before said rags are so removed from Philadelphia, the owners or agents thereof shall enter into a proper bond with the health officer, with sufficient sureties, in the sum of \$10,000, conditioned that none of said rags shall hereafter enter the State of Pennsylvania for consumption.

Dr. Richardson moved to amend by striking out State of Pennsylvania and inserting city of Philadelphia.

Adopted.

#### C. Resolution of State Board of Health.

At the regular meeting of State Board of Health, held at Harrisburg, November 11th, 1885, the following resolution was passed :

*Resolved*, That the Secretary, as executive officer, be directed to forbid the removal of the cargo of rags, known as the Japanese rags, from the city of Philadelphia into the country districts, until they have been disinfected.

On the 16th of November, the above resolution was transmitted by the Secretary to Messrs. Fitzpatrick & Pemberton, Philadelphia; Mr. Bouchy, custom house broker, Philadelphia; Messrs. McClintock & Lockwood, consignees, New York; Mr. C. J. Lenig, consignee, Philadelphia, and to the Board of Health of the city of Philadelphia.

#### D. Instructions to Special Agent.

STATE BOARD OF HEALTH,  
PHILADELPHIA, *February 5, 1886.*

MR. ROBERT CLARK :

You are hereby instructed to proceed at once, as special agent of the State Board of Health of Pennsylvania, to the warehouses of Fitzpatrick & Pemberton, South Delaware avenue, and observe from which of them bales of rags, principally blue in color, are being removed; thence to Queen Street wharf or other wharf from which they may be in process of embarkation on lighters or otherwise; thence to Kaighn's Point, N. J., to the wharves of the Reading Railroad Company,

to discover whether they are being unloaded at that place; to observe the names and numbers of one or more cars into which they are loaded, and, when opportunity offers to do so unobserved, to make written memoranda of such names and numbers, and probable destination of the same. Thence, if your information warrants you in so doing, to proceed to Elizabeth, N. J., and observe the arrival of such cars and the road on which they are then forwarded; thence to Jenkintown, Wayne Junction, Tabor Junction, Richmond, Spring Mills, or other point to which your observation leads you to conclude they are being shipped, and to report to the Secretary of the Board, at as early a time as possible, any definite information you may have obtained.

BENJAMIN LEE,  
*Secretary.*

**E. Report of Special Agent.**

PHILADELPHIA, *February 16, 1886.*

BENJAMIN LEE, Esq.,

*Secretary State Board of Health:*

SIR: According to your written instructions of the 5th inst., to watch where a certain lot of Japan rags, stored in the warehouses of Fitzpatrick & Pemberton, were being shipped to, I proceeded at once to Queen and Catharine Street wharves, found at the latter wharf a lighter already loaded with Japan rags, but not knowing where they came from, had to wait until the 8th inst. until another lighter came in. On the morning of the 8th I found wagons hauling Japan rags from the warehouse of Fitzpatrick & Pemberton, No. 748 South Delaware avenue and loading them on lighter No. 3, license 310, Philadelphia Transportation and Lighter Company, 108 Walnut street, Philadelphia, wharf No. 35, Catharine street. On the morning of the 9th of February I crossed to Kaighn's Point. Lighter No. 3 just coming into wharf being towed by tug boat Benj. Hooley. I waited until I saw the lighter unloaded into cars marked as follows:

Car No. 1632, N. Y. N. H. & H. R. R.

Car No. 11239, New York & New England R. R.

Car No. 553, C. R. R. of N. J.

Car No. 24485, N. Y. L. E. & W. R. R.

Car No. 7064, Philadelphia & Reading R. R.

Car No. 7421, Philadelphia & Reading R. R.

Found these cars standing on siding at Hamilton's Bros'. Mills, Lafayette, Montgomery county, Pa., yesterday the 14th inst.

All this I most respectfully submit.

ROBERT CLARK.

STATE BOARD OF HEALTH,

PHILADELPHIA, *February 16, 1886.*

MESSES. HAMILTON & SONS, *Spring Mills:*

GENTLEMEN: Allow me to recall to you the fact that the Japanese rags which I have traced to the door of your mill have twice been de-

clared to be sources of danger to the public health; first by the health officer of the port of New York, and since by the Board of Health of the city of Philadelphia, and that in consequence of such declaration, and in consideration of the evidence upon which it was made, the Board of Health of this Commonwealth, in November last, forbade their introduction into the State anywhere outside of the limits of the city of Philadelphia until they had been thoroughly disinfected in bulk. In view of these facts I trust that you will see the wisdom of at once telegraphing to the parties who are shipping these rags that you will refuse to receive any further consignments of them.

You have, I presume, already received my order by Dr. Atkinson, Medical Inspector to the Board, directing that such of the rags as you may have already unloaded shall be thoroughly disinfected before being sorted or in any way handled by your work people further than is absolutely necessary for the purpose indicated. The epidemic of small-pox, which originated in the rag room of your mill last summer, and which but for the energetic action of the local authorities, aided by the Boards of Health of Philadelphia and of the State, might readily have spread to the city, should have suggested the necessity of especial caution in regard to this well-known source of contagion.

On the contrary, you have attempted to evade the express order of the Board, surreptitiously introducing into the State rags collected in a country where two of the most horrible epidemic diseases known, cholera and small-pox, are proved to have been prevailing at the time of their export. Such recklessness is simply astounding and merits the severest condemnation.

You will please report to this office, at your earliest convenience, the means which you propose to adopt in compliance with the instruction to disinfect in bulk, such of the bales, if any, as have been already unloaded.

I am, gentlemen,

Yours respectfully,

BENJAMIN LEE,  
*Secretary and Executive Officer.*

PHILADELPHIA, February 17, 1886.

DR. BENJAMIN LEE,

*Secretary and Executive Officer of State Board of Health :*

DEAR SIR: I respectfully report that immediately on the receipt of your notice relative to the mills of Messrs. Hamilton, at Lafayette, Montgomery county, I took the next train and reached the mills by 3 P. M., February 16, 1886.

I was given every opportunity to examine into the matter and found a large number of bales filled with blue rags, and giving forth a strong odor of camphor. These had been and were still being unloaded from the cars, and the mills had been running on this stock for about

two weeks. The Messrs. Hamilton acknowledged that this was a part of the cargo of the Lucy A. Nickles. As fast as they had been received, these rags were at once manufactured into paper. No disinfection had been resorted to by the mill owners.

I made careful inquiries and could learn of no sickness either among the mill hands or in the neighborhood. I found the upper rooms of the mills quite crowded with these bales. Messrs. H. assured me that they had been using this kind of stock from Japan for several years, and a number of the employes assured me that they preferred these rags to those of domestic origin, as being more sure to be free of disease.

I served the enclosed notice upon Mr. Hamilton, at his request, reading it to him. All of which is submitted by

Yours faithfully,

WM. B. ATKINSON, M. D.,  
*Medical Inspector for State Board of Health.*

PHILADELPHIA, *February 18, 1886.*

DR. BENJAMIN LEE,

*Secretary and Executive Officer State Board of Health.*

DEAR SIR: In compliance with your request I visited several of the rag warehouses of Messrs. Pemberton & Fitzpatrick, and, although owing to the lateness of the hour (5½ P. M.), I was unable to find any of the firm at either place, yet I was positively assured at 748 South Delaware avenue, that the entire cargo of rags of the Lucy A. Nickles had already been sent to Messrs. Hamilton.

Very respectfully,

WM. B. ATKINSON,  
*Medical Inspector Delaware District.*

PHILADELPHIA, *March 31, 1886.*

BENJAMIN LEE, M. D.,

*Secretary and Executive Officer State Board of Health:*

DEAR SIR: In response to your order of yesterday, I took the 3.36 P. M. train to the mills of Messrs. Hamilton. On my arrival I found that they had within an hour, *only*, received the carboy of condensed sulphuric acid with which to disinfect the rags. Since my last visit they have placed in the mill one of Ferry's dusters with which to shake out the dust from the rags prior to placing them in the sorting room. After seeing this in operation on two bales of rags, I believe that it will prove of great benefit in relieving the rag sorters from a source of annoyance and possible injury to their health.

Messrs. Hamilton will to-day commence the disinfection of the Japanese rags by placing 800 to 1,000 pounds in the duster at a time, and connect the carboy with the chamber of the duster so that the disinfectant will be continually pouring into the rags while they are being

shaken in the wings of the duster. I believe that this method will most surely bring the rags and all possible causes of infection into the most thorough contact with the disinfectant. They assure me that each quantity as above will be subjected to this process for about three-fourths of an hour, believing that time will prove sufficient for the purpose. About 400 bales have already been converted into paper. Most of these had been saturated with water through carelessness in landing from the lighters. To dry them the bales were opened and the rags spread upon the roof of the mill and there tossed about by the men to facilitate their thorough drying. They have 3,600 bales in the mill, and all of these they assure me shall be carefully subjected to the process of disinfection as above indicated.

After careful inquiry I was unable to learn of a single case of sickness in the neighborhood or among the work people.

All of which is respectfully submitted by

Yours very truly,

WM. B. ATKINSON,  
*Medical Inspector.*

OFFICE OF THE BOARD OF HEALTH,  
PHILADELPHIA, *March 23, 1886.*

Dr. BENJAMIN LEE,

*Secretary State Board of Health :*

SIR: The following is a copy of a report and resolution relative to the admission of foreign rags at the principal ports of entry on the Atlantic coast :

WHEREAS, The importation of old rags from foreign countries, and the handling of them without previous disinfection, is a constant source of danger to the health of the people on the seaboard of the United States :

*And whereas,* It is important to commerce and to the public health that there should be some uniform system or regulation governing the admission of foreign rags at the principal ports of entry on the Atlantic coast ; therefore, be it

*Resolved,* That the Lazaretto committee be instructed to seek and bring about, if possible, an early conference of the health authorities of the ports of Baltimore, Philadelphia, New York, New Haven, New London, Boston, Portsmouth and Portland, for the purpose of agreeing on some uniform regulation under which old rags from foreign countries shall be admitted to all of said ports.

Adopted the above date.

WM. P. TROTH,  
*Chief Clerk.*

No action in the matter as yet.

## II. THE QUARANTINE OF SMALL-POX IN THE PORT OF PHILADELPHIA.

### 1 Correspondence between the Secretary and the Board of Health of Philadelphia.

PHILADELPHIA, August 4, 1886.

*To the Honorable the President and members of the Board of Health  
of the city of Philadelphia :*

GENTLEMEN : I am instructed to transmit to your honorable body the following resolutions passed at a regular meeting of the State Board of Health.

Yours respectfully,

BENJAMIN LEE,  
*Secretary.*

*" Resolved, That it is the sense of this Board that the quarantine station on the Delaware river was created and exists for the protection, not of the city of Philadelphia alone, but of the entire State of Pennsylvania.*

*" Resolved, That this Board recommends to the Board of Health of Philadelphia the adoption of a regulation making it obligatory on the surgeons of all ships bringing immigrants to this port to examine all steerage passengers for evidence of vaccination, and in case such evidences are not satisfactory, to vaccinate such passengers at an early period in the voyage ; such examination and vaccination to be quite irrespective of the existence or non-existence of small pox at the port of departure, or on the vessel.*

*" Resolved, That, inasmuch as the period from October 1st to June 1st, is that in which small-pox prevails with the greatest virulence, therefore this board recommends to the Board of Health of Philadelphia, the observance of the same careful precautions against the introduction of that disease by infected persons, clothing, baggage or cargos during the season referred to, as are insisted on during the alternate period with regard to yellow fever and cholera."*

OFFICE OF THE BOARD OF HEALTH  
S. W. COR. SIXTH AND SANSON STREETS.,  
PHILADELPHIA, August 12, 1886.

BENJAMIN LEE, M. D.,

*Secretary State Board of Health :*

DEAR SIR : I am directed by the Board of Health to transmit to you the attached reports.

Respectfully,

WM. P. TROTH,  
*Chief Clerk.*



LAZARETTO, DELAWARE COUNTY, PA., *August 10, 1886.*

TO A. A. HIRST, Esq.,

*Secretary of the Board of Health :*

SIR : I have the honor to report in reference to the communication from the State Board of Health, touching upon the vaccination of immigrants brought to this port by the regular line of steamers, that the precautions therein recommended are fully carried out by the surgeons of the line at all seasons of the year. But this loathsome and contagious disease will never be stamped out until vaccination is made compulsory by statutory law in this as well as every other country.

Yours respectfully,

F. S. WILSON,  
*Lazaretto Physician.*

HEALTH OFFICE,  
PHILADELPHIA, *August 28, 1886.*

BENJAMIN LEE, M. D.,

*Secretary State Board of Health :*

SIR : I am directed by the Board of Health to transmit to you the following copy of resolution passed this date.

Respectfully yours, &c.,

JOHN W. BROWN;  
*Acting Chief Clerk.*

*Resolved,* That the Secretary of the Board of Health of Pennsylvania be respectfully informed that a regulation (similar to that suggested for adoption in the resolutions of the State Board transmitted on August 4) requiring that all immigrants shall be examined at the port of embarkation or during the voyage for evidences of vaccination, and in case such evidences are not satisfactory that they shall be vaccinated before their arrival at this port, has been strictly carried out since the year 1881.

*Resolved,* That a copy of the communication of Messrs. Peter Wright & Sons, agents for the American Line and the Red Star Line of steamers, bearing on this subject, and a copy of the report of the health officer showing the freedom of the city from small-pox during the past year, be sent to the Secretary of the State Board, together with these resolutions.

OFFICE OF THE BOARD OF HEALTH,  
PHILADELPHIA, *August 26, 1886.*

WM. H. FORD, M. D.,

*President Board of Health, Philadelphia :*

DEAR SIR : In reply to your favor of this date we beg to assure you that the agreement made between your Board and this company that all immigrants were to be examined at the port of embarkation or

during the voyage for evidences of vaccination, and in case such evidences were not satisfactory they were to be vaccinated before their arrival at this port, is being strictly carried out.

We are surprised at the statement of the Assistant Secretary of the Iowa Board of Health that small-pox was known to be prevailing upon any of the steamers.

We have not knowledge that small-pox ever prevailed upon any of our vessels, the few cases which have occurred from time to time upon our vessels have been promptly reported by the surgeons in charge.

You have, we presume, not overlooked the fact that ours are not the only passenger steamers coming to this port.

Yours, very respectfully,

PETER WRIGHT & SON,  
H. G. HUMERLY.

PHILADELPHIA, *August 10, 1886.*

*To the Board of Health :*

GENTLEMEN: I most respectfully report that there has not been a case of small-pox or varioloid in the city of Philadelphia since the 2d day of June, 1885.

Several cases have been reported, but upon investigation by the medical inspectors they have all proven to be measles, chicken-pox, rupia and skin diseases. One case reported as varioloid, March 3, 1886, had not been reported until several weeks after the patient had recovered, so that this department had no means of verifying the diagnosis.

The physician in charge of the case was fined for not reporting in time. March 22, 1886, a case of varioloid was taken from the steamship British Princess, and immediately isolated at Municipal Hospital. Under these circumstances I cannot think it probable, or even possible, that small-pox could have been introduced into any other portion of this State or country through the port of Philadelphia.

M. VEALE,  
*Health Officer.*

## APPENDIX F.

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### PROCEEDINGS AND PAPERS OF THE STATE SANITARY CONVENTION, HELD AT PHILA- DELPHIA, MAY 12, 13 AND 14, 1886.

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I. Preliminary announcement.

II. Programme.

III. Papers read before the convention.

1. Heredity and other Peculiarities affecting Health and Longevity—By C. W. Chancellor, M. D., Secretary of the State Board of Health of Maryland.
2. The Artificial Feeding of Infants—By John M. Keating, M. D., Visiting Obstetrician to the Philadelphia Hospital.
3. Economic Sanitation—By Albert L. Gihon, Medical Director United States Navy.
4. Sewering and Draining Cities—By George E. Waring, of Newport, R. I.
5. The Financial Aspect of Sanitation—By Alfred Ludlow Carroll, M. D., late Secretary of the State Board of Health of New York.
6. On the Sanitary Significance of Sporadic Typhoid Fever—By Pemberton Dudley, M. D., member of the State Board of Health.
7. The Progress of Sanitary Science in the State of Mississippi during the past ten years—By W. F. Hyer, M. D., member of the State Board of Health of Mississippi.
8. The Disposal of Human Excreta by Fire—By W. S. Ross, M. D., of Madisonville, Kentucky.
9. Physic-tipping and Medicine-bibbing; a Warning against Intemperance in the use of Drugs—By Frank Woodbury, M. D., Professor of Therapeutics, Materia Medica and Clinical Medicine in the Medico-Chirurgical College of Philadelphia.
10. Over-work and Sanitation in the Public Schools of Philadelphia, with Remarks on the Influence of Over-work in the Production of Nervous Diseases and Insanity—By Charles K. Mills, M. D., President of the American Neurological Association, etc.
11. The Necessity of Physical Education—By Carl R. Horsch, M. D., member of the State Board of Health of New Hampshire.
12. The Heating and Ventilation of Public School Buildings as Illustrated by the System Introduced into the New High School Building at Chester—By D. W. Jefferis, M. D., member of the school board of Chester.
13. Defective Vision in School Children—By Peter D. Keyser, M. D., Professor of Ophthalmology in the Medico-Chirurgical College of Philadelphia.
14. An Epidemic of Diphtheria traced to its Source—By Benjamin Lee, M. D., Secretary of State Board of Health of Pennsylvania.
15. The Hygiene of Old Age—By H. C. Wood, M. D., Professor of Materia Medica and Therapeutics in the University of Pennsylvania.
16. Our Drugs and Medicines—By L. Wolf, M. D., President of the Philadelphia Pharmaceutical Examining Board, etc.
17. On Continuous Preventive Disinfection of House Drainage—By Henry Hartshorne, M. D., of Philadelphia.

18. A Plea for more Prolonged Isolation in the Management of Scarlet Fever—By W. W. Vinnedge, M. D., of Lafayette, Indiana.
19. What the State owes to the People and the People to the State; the Annual Address before the State Board of Health of Pennsylvania—By the Hon. Erastus Brooks, a member of the New York State Board of Health.
20. Remarks on Vaccination—By W. M. Welch, M. D., Physician to the Municipal (Small-pox) Hospital of Philadelphia.
21. The Present and Prospective Sanitary Condition of Pittsburgh, Pennsylvania—By Crosby Gray, Health Officer of Pittsburgh.
22. The Water Supply of Philadelphia—By J. Cheston Morris, M. D., of Philadelphia.
23. On Wholesome Water for Cities and Towns—By Charles Smart, M. D., Major and Surgeon, United States Army.
24. The Quality of the Water Supply of Philadelphia as tested by Vital Statistics—By Richard A. Cleeman, M. D., Philadelphia.
25. Influence of Diet on Health—By Alfred K. Hills, M. D., of New York city.
26. House and Yard Ventilation—By W. C. Van Bibber, of Baltimore, Maryland.
27. Forced Ventilation *vs.* Natural Ventilation (or Ventilation by Heat)—By Russell Thayer, C. E., of Philadelphia.
28. The Majesty of Law in Sanitation—By J. Andrew Harris, D. D., of Philadelphia.
29. Filtration of Drinking Water a Vital Necessity—By Charles F. Wingate, Sanitary Engineer.
30. Narcotics and the Appetites which they Produce—By R. Lowry Sibbet, A. M., M. D., of Carlisle, Pennsylvania.
31. Technics of Animal Vaccination—By W. L. Zuill, M. D., D. V. S., Professor of Surgery and Obstetrics, Veterinary Department, of the University of Pennsylvania.
32. Importation of Foreign Rags into American Ports—By F. S. Wilson, M. D., late Lazaretto Physician at the Port of Philadelphia.

### I. PRELIMINARY ANNOUNCEMENT.

A Sanitary Convention, the object of which will be to afford an opportunity for an expression of opinion on matters relating to the public health and the discussion of methods looking towards an advancement in the sanitary condition of the Commonwealth, the prevention of sickness and avoidable death, and the improvement of the conditions of living, will be held in Philadelphia, under the auspices of the State Board of Health, on Wednesday, Thursday and Friday, May 12, 13 and 14, 1886.

The address of welcome will be delivered by His Excellency, Hon. Robert E. Pattison, Governor of Pennsylvania.

The following will be among the subjects that will be discussed by prominent sanitarians:

1. The sanitary needs of school buildings and grounds.
2. The water supply of towns and cities.
3. The water supply of Philadelphia.
4. The disposal of slops, garbage, refuse, etc.
5. The prevention of communicable diseases.
6. The influence of clothing on health.
7. Ventilation.

8. The drainage and sewerage of cities and towns.
  9. The drainage and sewerage of Philadelphia.
  10. The influence of diet on health.
  11. The relations of christianity to health.
  12. Mistakes in school architecture.
  13. Defective vision in school children: Causes and management.
  14. The necessities of physical education.
  15. Drainage and sewerage in country districts.
  16. Sanitary science in villages.
  17. Municipal sanitation.
  18. Artificial feeding of infants.
  19. Condensed milk.
  20. Various artificial baby foods.
  21. The inheritance of disease.
  22. Hygiene of the home.
  23. Sanitary plumbing and drainage.
  24. Tests for impurities in water: The use of filters.
  25. Germicides.
  26. Vaccination.
  27. The hygiene of old age.
  28. Cholera.
  29. City *versus* country life, from a hygienic point of view.
- The public are cordially invited to take part in and help to make a success of this convention.

At a later date a circular of details will be issued.

JOSEPH F. EDWARDS, M. D.

*Chairman Committee of Arrangements.*

224 S. 16th St., Philadelphia, Pa.

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## II. PROGRAMME.

State Sanitary Convention under the auspices of the State Board of Health, in McCaull's Opera House, Broad Street below Locust, Philadelphia, Wednesday, Thursday and Friday, May 12th, 13th and 14th, 1886.

The object of the Convention will be to afford an opportunity for an expression of opinion on matters relating to the public health and the discussion of methods looking towards an advancement in the sanitary condition of the Commonwealth, the prevention of sickness and avoidable death, and the improvement of the conditions of living.

### Organization of the Convention.

#### PRESIDENT.

William Pepper, M. D., LL. D., Provost of the University of Pennsylvania.

## VICE PRESIDENTS.

- Hon. William B. Smith, Mayor of Philadelphia.  
Hon. James Pollock, }  
Hon. J. F. Hartranft, } ex-Governors of Pennsylvania.  
Hon. Henry M. Hoyt, }  
Hon. Richard Vaux, }  
Hon. Samuel G. King, } ex-Mayors of Philadelphia.  
Hon. A. F. Mizener, Mayor of Erie, Pa.  
Hon. Lewis C. Cassidy, Attorney General of Pennsylvania.  
Hon. William S. Stenger, Secretary of the Commonwealth of Pennsylvania.  
Hon. J. Simpson Africa, Secretary of Internal Affairs of Pennsylvania.  
Hon. Jerome B. Niles, Auditor General of Pennsylvania.  
Hon. James I. Mitchell, Judge Court Common Pleas.  
Hon. James Gay Gordon, Judge Court Common Pleas.  
Hon. James H. Campbell, ex-Postmaster General United States.  
Hon. Robert Adams, State Senator.  
Hon. A. K. McClure, editor *Times*.  
Right Rev. William Bacon Stevens, D. D.  
Right Rev. Edmund de Schweinitz, D. D., Bethlehem, Pa.  
Right Rev. Cortlandt Whitehead, D. D., Pittsburgh, Pa.  
General Presley N. Guthrie, Adjutant General of Pennsylvania.  
General J. P. S. Gobin, Lebanon, Pa.  
General George R. Snowden, Philadelphia, Pa.  
Colonel Richard S. Edwards, Quartermaster General of Pennsylvania.  
Mr. Charles Emory Smith, editor *Press*.  
Mr. Robert S. Davis, proprietor *Call*.  
Mr. Louis N. Megarge, editor *News*.  
Mr. William M. Singerley, proprietor *Record*.  
Dr. Daniel G. Brinton, editor *Medical and Surgical Reporter*.  
Mr. L. Clarke Davis, *Inquirer*.  
Mr. James R. Gates, President Select Council, Philadelphia.  
Mr. Charles Lawrence, President Common Council, Philadelphia.  
Mr. John Bradsley, Chairman Finance, Common Council.  
Colonel William Ludlow.  
Mr. H. G. Sickel, President Board of Health of Philadelphia.  
Mr. A. A. Hirst, Secretary Board of Health of Philadelphia.  
Mr. John Wanamaker.  
Col. Robert P. Dechert, Controller of Philadelphia.  
Major Moses Veale, Health Office of Philadelphia.  
Dr. Wm. M. Welch, Physician in charge Municipal Hospital, Philadelphia.  
Dr. Henry Leffmann, Port Physician.

Dr. F. S. Wilson, Lazaretto Physician.  
Dr. Roberts Bartholow, Dean Jefferson Medical College.  
Dr. A. R. Thomas, Dean Hahnemann Medical College.  
Dr. P. D. Keyser, Dean Medico-Chirurgical College.  
Dr. Rachel L. Bodley, Dean Women's Medical College of Pennsylvania.  
Dr. R. J. Levis, President Philadelphia County Medical Society.  
Dr. William H. Pancoast, Emeritus Professor of Anatomy, Jefferson Medical College.  
Dr. D. Hayes Agnew, Professor of Surgery, University of Pennsylvania.  
Dr. William B. Atkinson, Secretary American Medical Association.  
Dr. P. H. Bailhache, U. S. M. H. S.  
A. H. Fetterholf, Ph. D., President Girard College.  
Mr. Samuel C. Perkins, President Public Building Committee.  
Mr. Wm. B. Land, Secretary Public Building Committee.  
Mr. John Gay, President Commissioners of Fisheries.  
Mr. Samuel D. Smedley, Chief Engineer and Surveyor of Philadelphia.  
Mr. William Dixey, Commissioner Markets and City Property, Philadelphia.  
Mr. Cadwalader Biddle, Secretary Board of Public Charities.  
Mr. George A. Cotton, President Board of Port Wardens.  
Mr. Christopher Stuart Patterson, Secretary Eastern Penitentiary.  
Mr. Frederic Collins, President House of Refuge.  
Mr. A. M. Spangler.  
Mr. W. Heyward Drayton, President Directors City Trusts.  
Mr. Richard L. Ashhurst.  
Captain W. Stokes Boyd.  
Mrs. E. D. Gillespie.

#### Programme.

Owing to the large number of papers to be read, the Committee earnestly request the participants to adhere closely to the apportionment of this programme. The audience are invited to take part in the discussions, which must be limited to *five minutes* for each participant.

WEDNESDAY, MAY 12.

#### *Morning Session.*

10 A. M. Prayer by the Revd. Matson Meier-Smith, D. D., Professor in the Philadelphia Divinity School.  
Introductory remarks by the President.  
Address of welcome by His Excellency Robert E. Pattison, Governor of Pennsylvania.

- 11 A. M. "Prevention of Communicable Diseases." By Morton Prince, M. D., of Boston, Mass.
- 11.30 A. M. "An Epidemic of Diphtheria Traced to its Source." By Benjamin Lee, A. M., M. D., Secretary State Board of Health of Pennsylvania.
- 12 M. "Tests for Impurities in Water." By H. F. Formad, M. D., of Philadelphia, Lecturer on Experimental Pathology, University of Pennsylvania.
- 12.30 P. M. "Necessity of Physical Education." By Carl H. Horsh, M. D., of Dover, N. H., Member State Board of Health of New Hampshire.

*Afternoon Session.*

- 2 P. M. "Importation of Foreign Rags into American Ports." By F. S. Wilson, M. D., Lazaretto Physician.
- 2.30 P. M. "Heating and Ventilation of Public School Buildings," as illustrated by the system introduced into the new High School Building at Chester. By D. W. Jefferis, M. D., of Chester, Pa.
- 3 P. M. "Narcotic Appetites." By J. Lowry Sibbett, M. D., of Carlisle, Pa.
- 3.30 P. M. "Economic Sanitation." By Albert L. Gihon, M. D., Medical Director, U. S. N.
- 4.00 P. M. "Our Drugs and Medicines." By L. Wolff, M. D., President Pharmaceutical Examining Board of Philadelphia.
- 4.30 P. M. "Physic Tippling and Medicine Bibbing," a Warning against Intemperance in the Use of Drugs. By Frank Woodbury, M. D., Professor of Materia Medica and Therapeutics in the Medico-Chirurgical College of Philadelphia.
- 5 P. M. "Healthy Dwellings." By V. C. Vaughan, M. D., of Ann Arbor, Michigan, Member Michigan State Board of Health.
- Discussion by Mr. George N. Bell, C. E., of Newport, R. I. Mr. William B. Land, Secretary Public Building Commission, Philadelphia. A. R. Thomas, M. D., Dean Hahnemann Medical College.

*Evening Session.*

Annual address before the Board.

- 8 P. M. "The Obligation of States and Citizens to Preserve the Health of the People." By Hon. Erastus Brooks, of West New Brighton, N. Y., Member New York State Board of Health.

THURSDAY, MAY 13.

*Morning Session.*

- 10 A. M. "Drainage and Sewerage of Cities and Towns." By Colonel George E. Waring, Jr., of Newport, R. I.



Discussion by Hugh Hamilton, M. D., of Harrisburg, Pa. Joseph G. Richardson, M. D., Professor of Hygiene, University of Pennsylvania.

11 A. M. "The Relations which the Topography of Harrisburg, Pa., bear to its Drainage and Sewerage."—Illustrated by maps and charts. By Hugh Hamilton, M. D., of Harrisburg, Pa.

11.45 A. M. "The Majesty of Law in Sanitation." By Rev. J. Andrew Harris, D. D., of Chestnut Hill, Pa.

12.15 P. M. "The Prevention of the Spread of Scarlet Fever." By W. W. Vinnedge, M. D., of Lafayette, Indiana.

12.30 P. M. "Means of Elevating the Standard of Supplies." By Mr. H. Wharton Amerling, of Philadelphia.

12.45 P. M. "The Adulteration of Candy." By E. A. Heintz, editor *Confectioner's Journal*, Philadelphia.

*Afternoon Session.*

2 P. M. "Heredity and other Peculiarities affecting Health and Longevity." By C. W. Chancellor, M. D., of Baltimore, Md., Secretary State Board of Health of Maryland.

Discussion by A. J. B. Jenner, A. M., M. D., of Detroit, Michigan. J. G. Richardson, M. D., Professor of Hygiene, University of Pennsylvania.

2.45 P. M. "The Duties of Sanitary Authorities in Reference to the General Use of Alcohol." By Prof. Henry Leffmann, M. D., of Philadelphia.

3 P. M. "Hygiene of Old Age." By Prof. H. C. Wood, M. D., of Philadelphia.

Discussion by Lawrence Turnbull, M. D., of Philadelphia.

3.30 P. M. "The Influence of Over-work in the Production of Nervous Diseases and Insanity." By Prof. C. K. Mills, M. D., of Philadelphia.

4 P. M. "Defective Vision in School Children." By Prof. P. D. Keyser, M. D., of Philadelphia.

Discussion by A. J. B. Jenner, A. M., M. D., of Detroit, Michigan.

4.30 P. M. "Municipal Sanitation." By H. B. Horlbeck, M. D., of South Carolina, Health Officer of Charleston.

Discussion by Morton Prince, M. D., of Boston, Mass.

5 P. M. "Vaccination." By Dr. Wm. M. Welch, Physician-in-Charge Municipal Hospital, Philadelphia.

Discussion by A. J. B. Jenner, A. M., M. D., of Detroit, Michigan.

*Evening Session.*

8 P. M. "Water Supplies of Town and Cities." By Charles Smart, M. D., Major and Surgeon, U. S. A.

FRIDAY, MAY 14.

*Morning Session.*

10 A. M. "Artificial Feeding of Infants." By John M. Keating, M. D., of Philadelphia.

Discussion by Prof. Albert R. Leeds, M. D., of Stevens' Institute of Technology, Hoboken, N. J. A. J. B. Jenner, A. M., M. D., of Detroit, Michigan.

10.45 A. M. "The Water Supply of Philadelphia." By J. Cheston Morris, M. D., of Philadelphia.

Discussion by Prof. Albert R. Leeds, M. D. Charles W. Dulles, M. D., of Philadelphia.

11.45 A. M. "Mistakes in School Architecture." By J. H. McClelland, M. D., of Pittsburgh, member State Board of Health of Pennsylvania.

Discussion by Prof. P. D. Keyser, M. D., of Philadelphia.

12.30 P. M. "Disposal of Human Excreta by Fire." By W. S. Ross, M. D., of Madisonville, Kentucky.

*Afternoon Session.*

2 P. M. "Influence of Diet on Health." By A. K. Hills, M. D., of New York.

2.15 P. M. "The Financial Aspect of Sanitation." By Alfred Ludlow Carroll, M. D., of West New Brighton, New York.

2.30 P. M. "Social Sanitation among the Japanese." By D. R. Simmons, M. D., of Yokohama, Japan.

3 P. M. "The Sanitary Significance of Sporadic Typhoid Fever." By Pemberton Dudley, M. D., of Philadelphia, Member State Board of Health of Pennsylvania.

3.30 P. M. "The Causation of Pneumonia." By Henry B. Baker, M. D., of Lansing, Michigan, Secretary Michigan State Board of Health.

4 P. M. "Care of Animals in the Propagation of Vaccine." By Prof. W. L. Zuill, M. D., Professor of Comparative Anatomy, Veterinary Department, University of Philadelphia.

The balance of this day's session will be devoted to voluntary remarks.

Among the many distinguished gentlemen who have promised to be present and take part in the discussions, besides those already announced in the programme, we note the following:

Charles Mitchell, M. D., Health Officer of Nashville, Tennessee.

John B. Hamilton, M. D., Surgeon General United States Marine Hospital Service.

Hon. John F. Hartranft.

Colonel William Ludlow.

Adjutant General P. N. Guthrie.

W. C. Cook, M. D., County Health Officer, Nashville, Tennessee.

Edward W. Germer, M. D., Erie, Pennsylvania, President State Board of Health of Pennsylvania.

Mr. Samuel L. Smedley, Chief Engineer and Surveyor of Philadelphia.

W. J. McClure, M. D., Health Officer, York, Pennsylvania.

George Homan, M. D., } Members Missouri State Board of Health.  
 Albert Merrill, M. D., }  
 W. F. Hyer, M. D., Member Mississippi State Board of Health.  
 Dr. David Engelman, Easton, Pennsylvania, Member Pennsylvania  
 State Board of Health.

G. H. Wilson, M. D., Member Connecticut State Board of Health.

The headquarters of the Convention will be at the St. George hotel, where special rates have been made for those attending the Convention.

PEMBERTON DUDLEY, M. D.,  
 BENJAMIN LEE, M. D.,  
 JOSEPH F. EDWARDS, M. D.,  
*Committee of Arrangements.*  
 JOSEPH F. EDWARDS, M. D.,

*Chairman Com. of Arrangements, 224 S. 16th, St., Phila., Pa.*  
 EDWARD W. GERMER, M. D.,  
*Pres. State Board of Health of Pennsylvania.*

### III. PAPERS READ BEFORE THE SANTARY CONVENTION IN PHILADELPHIA, MAY 12, 13 AND 14, 1886.

#### 1. Heredity and Other Peculiarities Affecting Health and Longevity.

By C. W. CHANCELLOR, M. D., *Secretary of the Maryland State Board of Health.*

*Mr. President and Gentlemen of the Convention:* If health is such a blessing—the very source of all pleasure—it may be worth the pains to discover the regions where it grows, the springs that feed it, the customs and methods by which it is best cultivated and preserved.

Every aged person is apt to think his or her own peculiar habits the cause of long life; for example, a certain lady who lived to be 90 years of age, ascribed her preservation to a practice she had of shutting herself up in the house from the first of October until the first of April; while a pauper, who lived to be 115 years old, ascribed her great age to her absolute indifference to all weathers. We find one old gentleman at 96 years of age ascribing his robust health and green old age to the fact that he limited himself to one simple dish at dinner, and had all his life eschewed intoxicating liquors; while his older brother, on “the shady side” of one hundred, but still enjoying perfect health, declares that he is in the habit of making his dinner on roast-pig and cracklings, fat bacon and cabbage, baked beans and cucumbers, currant tarts and cheese, with four pints of small beer and a pint of “Jersey lightning” as his daily beverage.

There is no circumstance, perhaps, which seems more surely to promise health and long life to any individual, than his being descended from healthy and long-lived ancestors. This doctrine is of great antiquity; for both Hippocrates and the elder Pliny have remarked that, as a general rule, healthy parents will have healthy children. It is a well-established fact, moreover, that children have a predisposition to suffer from the maladies of their parents; and, on the same principle, they are entitled to enjoy the perfections of those to whom they owe their birth.

There are some melancholy instances where the vices and diseases of the parents have become the bane of their posterity; for there can be no doubt that parents not only communicate their peculiarities to their children, but also a predisposition to certain diseases. Huxley states that "no structural modification is so slight, and no functional peculiarity is so insignificant in either parent, that it may not make its appearance in the offspring."\*

Darwin is still more explicit on this point. He says: "Ovules and the male element, before they become united, have, like buds, an independent existence. *Both have* the power of transmitting *every single character* possessed by the parent form. We see this clearly when hybrids are paired *inter se*, for the characters of either grand-parent then reappear perfectly or by segments, in the progeny."†

Some authors hold that the offspring is actually a dual personality, made up of a complete organization or individuality inherited from the father, and another equally complete inherited from the mother. Thus, says Huxley: "It is conceivable, and, indeed, *probable*, that every part of the adult contains molecules derived from the male and female parents; and that, regarded as a mass of molecules, the entire organism may be compared to a web, of which the warp is derived from the female and the woof from the male. And each of these may constitute an individuality in the same sense, as the whole organism is one individual, although the matter of the organism has been continually changing."‡

Many suppose that the hereditary predisposition may be obliterated by suitable measures; that whatever promotes the general health of the individual will tend to remove any weakness, or facility of derangement, depending on original corporeal structure. This doctrine is perhaps well founded, if we admit the theory of "variations," which is a feature in heredity equal in importance with that of transmission from parent to child.

Professor Brooks says: "We know that each characteristic has been gradually acquired through a long series of modifications; that all the wonderful adaptations which fit animals to their surroundings,

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\*Anatomy of Invertebrate Animals, p. 30.

†Variations of Animals and Plants. Vol. ii., p. 431.

‡See Encyclopedia Britannica, Art. Evolution.

and meet their peculiar needs, have been evolved, step by step, by the natural selection of the fittest congenital *variations*. Each race characteristic has at one time been a new variation, and the process of modification is still going on and perfecting the harmony between the structure of each organism and its needs. No theory of heredity has any value unless it explains the way in which new features may become hereditary, continually make their appearance as congenital variations, at the same time that it accounts for the way in which established peculiarities are handed down from generation to generation.

"The problem," continues Professor Brooks, "is two sided; what is now hereditary was at one time variation, and each new variation may soon be hereditary. Heredity and variation are opposite aspects of the same thing, and an explanation must be examined and tested on the one side as well as on the other, before it can be accepted.

"It is plain that as soon as one part has varied in any direction, the harmonious adjustment of related parts will be disturbed, and that they too must vary correspondingly in order to restore the proper tone to the whole"§

Such being the case, it becomes us as sanitarians and physicians, to study this law of variation, which may furnish an explanation of the hidden causes of many diseases, and their connection with hereditary transmission.

It has frequently happened that where an individual has been distinguished for longevity, one or the other of his ancestors has been long lived; but this rule is far from being universal, and we are not to suppose that long-lived parents always secure long life to their offspring. Statistics will serve to show, in a measure, to what extent the rule may be relied upon. The number of individuals, beyond eighty years of age, mentioned in the reports of several London hospitals, as inmates, amounts to no fewer than 598; of these 303 affirmed that they were descended from long-lived ancestors, but the remaining 295 either knew nothing at all about their ancestors, or declared that they had not been remarkable for long life. From this it will appear that old age is in many instances a result of other circumstances, which may be combined with or altogether independent of long life in the parents.

That long lived parents should have children likely to live long is not to be wondered at. The same general rule applies to vegetable as to animal life. Although the seed of every tree or plant will produce a tree or plant of the same sort, and possessed of equal beauty and duration, yet at least two points must be attended to: 1st. That the seed must be sound and wholesome; and 2d. That it be deposited in a proper soil.

Though some authorities are inclined to deny the existence of hereditary diseases, they nevertheless acknowledge that a *predisposition* to a particular disease may exist; and daily experience must convince every one of common observation that there are many maladies which children *inherit* a "predisposition" to from their parents, even where endeavors have not been wanting to check that tendency. Again there are certain diseases, as for example the gout, which will afflict the father, but spare the son, only to reappear in the third generation.

Lord Bacon observes that "the immediate condition of the parents, as well of the father as of the mother, will affect their offspring;" but Sir Thomas Brown, while admitting that a certain *texture of stamina* is favorable to certain forms of disease, rejects the idea of hereditary taints. Other authors believe that the parent must be afflicted with the disease before the child is born, or, at least, that there must have been a previous taint in the constitution of the parent, in order to transmit the disease; thus, if no gouty taint existed in the family, and the parent was not afflicted by the disease *until he had reached forty years of age*, all his children born previous to that period would be exempt from it, whilst all those born afterwards could hardly escape a disposition to the malady.

In all animals much seems to depend upon the healthy state of the mother, in fixing the vital status of the child. It is quite well confirmed by experience that the state of the child's health and constitution depends much more upon the condition of the mother than on that of the father. Lord Bacon states, as a general proposition, that animals which partake more of the nature of their mother than their father are the longest lived, and he remarks that "among men as among other animals, those who resemble the mothers most are the longest lived."\*

It has been asserted that the physical organization or outward shape, at least of a male child, depends more upon the father than upon the mother, but that the talents and structure of the mind are derived from the mother. In regard to the second proposition, it is alleged that a clever woman seldom has children remarkable for mental deficiency, and that the abilities of many families may be traced to one distinguished female who introduced talents into it which have descended, not only to her immediate offspring, but have been transmitted to her remote posterity.

The cases of two of the most distinguished families in England, in point of talent, have been cited in verification of the foregoing theory. The abilities and eloquence of Pitt were believed to have been inherited from his mother, a Miss Innes, of Redhall, in the Highlands of Scotland, and the talents of the family of Dundas, of Arniston, have also been attributed to the marriage of one of their ancestors with a Miss Sinclair. On the other hand, Darwin, in discussing the statement

\*Hufeland, vol. ii., p. 123.

of certain authors, that the father influences the external characters and the mother the internal characters, declares emphatically that, "*It is an error to suppose that the male transmits certain characters and the female other characters.*"\*

In considering how much the health and stamina of children depend upon the condition of their parents, it may be a question for sanitarians to discuss, "Whether diseased persons should not be prohibited from marrying?" inasmuch as such marriages are likely to produce nothing but disease, deformity, social distress and political mischief.

Buchan, in the eighteenth edition of his *Domestic Medicine*, justly remarks, that "the unhealthiness of parents must be a fruitful source of disease in their children;" and that "it would be as reasonable to expect a rich crop from a barren soil, as that strong and healthy children should be born of parents whose constitutions have been worn out with intemperance or disease."

A delicate female, brought up within doors, and an utter stranger to exercise and open air, who lives, as it were, on tea and other slops, may bring a child into the world, but it is hardly fit to live. If to the delicacy of the mother we add the often irregular life of the father, we shall have further cause to believe that children who die early are in many instances victims to the shattered constitutions of their parents. A course of vice will spoil the best constitution; and when disease is once contracted and riveted in the habit, it is, in a manner, entailed upon posterity.

In regard to the question of perfect birth, as connected with health and longevity, it is only necessary to say that the usual period of gestation is nine calendar months, but there is very commonly a difference of one or two weeks. Hippocrates considered perfect birth so essential to a healthful manhood, that in his book *De Septimesti Partu*, he contends that children born in the seventh month seldom live long; but there are many instances recorded to the contrary. James Donald, an old man who resided near Dumbarton, in Scotland, and lived to the age of 100 years, was born, it is said, in the seventh month; and George III, who died in his eighty-second year, is also reported to have been born in the seventh month. It cannot be denied, however, that a uniform and faultless conformation of the whole body tends to promote health and long life, while an imperfect structure, whether it be the result of accident or hereditary predisposition, affords an easy opportunity for the onset of local diseases, which are often extremely prejudicial to the duration of life.

In some constitutions all diseases are mild and gentle, whilst in others they are violent, and are only cured, if at all, with difficulty. One person is liable to catch any contagious disorder, whilst another may, without hazard, enter houses infected with small-pox or other

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\* *Variations of Animals and Plants*, vol. ii, p. 431.

contagious maladies. Some individuals seem to have inherited a certain bodily and mental disposition to live long and keep well, whilst in others all the advantages combined—as a salubrious climate, a strict adherence to the best rules of diet, a regular course of recreation, exercise, etc.,—are not sufficient to insure a long or healthy life.

It is said that the great Boërhaave learned the characteristic signs of perfect health from the Dutch slave dealers, who from long practice necessarily became well acquainted with semiotics or the doctrine of signs and symptoms. The following are the signs which, according to medical authors, denote a good constitution, and when present in the parents prognosticate long life in the progeny.\*

1. A sound stomach and organs of digestion. The stomach has properly been called "*The father of the family*," for if it goes wrong the whole body suffers, and its variations readily become hereditary predispositions.

2. A capacious chest and healthy organs of respiration, breathing being the most necessary of the vital operations. That *phthisis pulmonalis* is transmitted from parent to child is now an admitted fact.

3. A heart not too irritable, the action of which is not increased by every trifling agitation of the mind or action of the body. This variation from a normal condition of the circulatory apparatus may lead to hereditary organic trouble.

4. A good temperament. The best is the sanguine, tempered with a little of the phlegmatic. This produces a serene, cheerful mind, moderate passions, undaunted courage, and that state of mind which is the most fitted for longevity.

5. A strong natural power of restoration and healing, by means of which the losses we daily and hourly sustain are not only repaired, but well repaired.

6. A uniform and faultless conformation of the whole body. An imperfect structure gives an easy opportunity for the advent of local diseases, which may bring on death.

7. No particular weakness of any part. Even where the organization is apparently good and perfect, there may be a concealed enemy in some organ, which may afterwards destroy the whole body.

8. A medium quality in the texture of the organization, strong and durable, but not too rigid. It is proper to bear in mind that strong constitutions sometimes do not last so well as the more feeble, for, in the first place, the strong are tempted to take less care of their health, and in the second place, they often suffer more from the same disease than those who have less energy to contend with it, the vehemence of the disorder, as in fevers and inflammations, being frequently aggravated by the strength of the patient.

Among the various circumstances which tend to promote health

\* See Finke's Medical Geography, vol. i, p. 449, also Tissot, Essai sur maladies des Gens du Monde, p. 8.



and longevity, independent of attention to the observance of particular rules, there is none of more real importance than the configuration of the body or the *physique* which the individual receives from nature, for in so delicate a machine as man any material fault in regard to structure must sooner or later be felt. Plausible arguments, however, are not wanting in favor even of deformity. Mr. William Hay, who was a member of Parliament, and himself deformed, thus defends the shape which nature gave him: "It is natural to imagine that if the human frame is warped and disproportionate, it will be lessened in regard to strength and activity, and will be rendered less fit for its different functions; consequently, that deformed persons are not healthy or long lived. But this is a question best determined by facts; and in this case the instances are too few or unobserved to draw a general conclusion from them. Besides, health is more in a person's own power than is commonly imagined, and is more the reward of temperance than the effect of constitution. The celebrated Æsop certainly was not young when he died, and might have lived longer had he not been murdered at Delphi. The Duke of Luxemburg died at 67, the Lord Treasurer Burleigh at 78, Mr. Pope's father at 75, and they were all deformed."\*

As a standard of perfection in the human figure, artists commonly divide the height of the body into ten times the height of the face. They likewise divide the face into three equal parts. The first commences at the springing of the hair on the forehead, and terminates at the root of the nose; the nose is the second division, and the third extends from the nose to the end of the chin. The celebrated artists Bartolozzi and Cipriani, however, give more grace to their figures by deviating from these proportions, and giving more length to the body, particularly in females.

Medical men, in their view of the form best calculated for health and longevity, deal more in general description than in minute details. According to Hufeland, who has treated more fully than any other medical author upon this part of the subject, the following is the portrait of a man destined for longevity:

"He has a well-proportioned stature, without being too tall. He is rather of the middle size, and somewhat thick set; his complexion not too florid; his hair approaches rather to the fair than the black; his head is not too large; his shoulders are rather round than flat; his neck is not too long; his belly does not project; his hands are large, but not too deeply cleft; he has a broad, arched chest, a strong voice, and prominent veins; his pulse is slow and regular. In general, there is a complete harmony in all his parts."†

The celebrated Lavater gives the following as the signs, if not the ingredients of long life: "An elevated forehead, sunken eyes, a large

\* See *Dodsley's Fugitive Pieces*, 1765.

† Hufeland on *Animal Life*, vol. 1, p. 231.

nose, somewhat curved, a soft but not overlax skin, a character artful, suspicious, covetous and deceitful; obstinacy and emulation are inseparable from it."†

In connection with this subject, no better account of the law of heredity can be given than that found in an article by Prof. Brooks, of the John Hopkins University, published in the *Popular Science Monthly* for June and July, 1879, under the title "The Condition of Women from a Zoölogical Point of View," wherein the distinguished author alleges that it is universally, but never absolutely true, that like produces like. "The offspring," he says, "resembles its parents in all fundamental characteristics. The human child, for instance, resembles its parents in the possession of all the characteristics which distinguish living things from those which are not alive, as well as those which distinguish animals from plants. The chemical, physical, and physiological changes which take place in its body and the histological structure of its tissues are like those of its parents, and its various organs are the same in form and function. \* \* \* It also shares with its parents the features or race characteristics of the particular tribe or race to which they belong. If they are Chinese, Indians or negroes, the child belongs to the same race, and manifests all the slight, superficial peculiarities of form, constitution and character by which that race is distinguished. Even the individual peculiarities of the parents, intellectual and moral, as well as physical, are now known to be hereditary. \* \* \* The child is like its parents, but not exactly like them. It is not even a compound of characteristics found in one or the other of them, but has individual characteristics of its own, slight variations, which may not have existed in either parent or in any more remote ancestors. \* \* \* \*

"The series of hereditary structures and functions which makes up the life of an organism is constantly being extended by the addition of new features, which, at first mere individual variations, are gradually built into the hereditary life history. In this way newly-acquired peculiarities are gradually pushed further and further from what may be called the growing end of the series, by the addition of newer variations above them. It can also be shown that, from time to time, the peculiarities of the other end of the series, the oldest hereditary features, are crowded out of the life of the organism and dropped, so that an animal which is high in the scale of evolution does not repeat, in its own development, all of the early steps through which its most remote ancestors have passed."

Statistics show that nearly one-half of all the children born die under five years of age, and that a majority of these perish from deficiency of stamina, or inherited ailments, most of which are amenable to measures of prevention. It is surprising to what an extent we may rectify

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† Hunter's Translation of Lavater, vol. iii, p. 169.

the *tendency to debility*, the inception of disease, *even anterior to birth*, when too often the mischief is unwittingly done by the mother, who produces in her offspring future diseases of body, or some degree of physical deterioration. Few mistakes, for example, are more common among women than that of regarding the very natural process of child-bearing as something seriously debilitating or otherwise abnormal, to be counteracted by change in their habits and mode of life, as the indulgence of various fancies and cravings, the consumption of more and richer food than usual, gratifying the appetite for stimulents, etc. These errors conduce directly to "variations" or "hereditary predispositions," which lead to the early dissolution of the offspring, or they foster those very evils which it was intended to avoid.

A scrofulous, consumptive or otherwise delicate tendency in the child may arise from the occurrence of conception when one or the other, or both, parents are laboring under or recovering from weakness or disease; and as certainly may epilepsy or idiocy in the offspring be traced to the intemperance of one parent or both.

Essential benefits may be conferred upon humanity by such reforms as can be silently effected by sanitary association, having for their golden aim the mitigation of human wretchedness; and what more promising field for those whose merciful mission it is to "go about doing good," than that of inculcating the simple, obvious laws of health, the infringement of which is so often followed by misery, disease and death? The life of man is not only embellished in its course by the advancement of sanitary science, but it is extended and rendered less doubtful.

As man reaches the plenitude of his physical and social development, the population becomes strong, intelligent and manly; while he remains, as it were, in perpetual infancy, whole generations are swept away without being able to profit by the past, or to bring social economy to perfection.

In his lowest state, man had no pleasures but those of sense, and no wants but those of appetite. In the gradual exaltation of human nature, every art contributes its contingent toward the general supply of his physical and mental perfection. Whatever abstracts the thoughts from sensual gratifications—whatever tends to improve health and prolong life—must advance, in some measure, not only our happiness, but the dignity of human nature. We are continually laboring to advance, step by step, through successive gradations of excellence towards perfection, which is dimly seen at a great distance, and which we must always follow, because we never can attain; but the pursuit rewards itself. One truth teaches another, and our store is always increasing, though nature can never be exhausted.

## II. The Artificial Feeding of Infants.

By JOHN M. KEATING, M. D.,

Visiting Obstetrician to the Philadelphia Hospital, and Lecturer on Diseases of Women and Children, Physician to St. Joseph's Hospital, Fellow of the College of Physicians, &c., &c.

The honor that was conferred upon me by the request to present a paper to this meeting, carried with it a responsibility which, I freely confess, the more I look into the subject, by no means lessens. The large audience which I address, gathered as they are from all portions of the Union, have come here to carry away to their constituents certain facts which I have endeavored to deduct from the mass of published material, and which are to be used for no less a purpose than the attempt at saving life.

Were my hearers alone members of the medical profession, it would not be necessary for me to explain the reason why so much stress is laid upon a subject which appears so simple, nor would I be required to throw the veil over the various apparent discrepancies and contradictory statements that pervade the literature of my subject. They know full well that thousands yearly die in early infancy from disease which is the offshoot of ignorance and carelessness.

They also know that science is not progressive by rapid strides in lines that are straight, but that its true progress is slow, tentative; its path marked by discussions; oftentimes it seems to retrograde, and then, discovering a new way, it abandons the old one, but in the long run reaches the goal.

Men's ambition for fame and desire for riches seem for a time to cover the track of progressive science, to anticipate it, to lead it on, but the spark burns brightly beneath.

To my non-medical hearers I will say that, in answer to your question. Why is it that so many apparent differences exist regarding the bringing up of infants? I reply that it is not because science has ceased to advance in this direction, but because we are situated in its pathway, and not at its goal.

We are learning from the chemist the composition of human milk — of nature's food; from the physiologist the composition of the secretions; from the anatomist the laws of growth and development of the human body.

These studies are intricate; they require frequent corrections, and, as a consequence, the sum total is affected by discrepancies existing in the figures of the component parts.

I believe that it is better for us to-day to avoid questions that are still *sub judice*, and confine ourselves as closely as possible to such facts as will warrant our basing some conclusions upon them.

Let me for a moment give you a few statistics to show you the importance of our subject. We are entering the season of the year during which intestinal disorders among infants give us a mortality that is appalling. I believe that if you will carefully study the matter which I will present to you, and disseminate these suggestions, which are based not alone upon my experience, but upon that of others, you will be benefactors—more than that, you will save life.

The tables I present, compiled from the census reports of 1880, prove several interesting points. One is the enormous increase of mortality during the heated season; the other, the fact that the much-dreaded *second* summer has a low comparative death rate. Thus, in New York and Pennsylvania, for 1880, 35,377 children died within the *first* year (inclusive), and but 6,031 between the first and second years, and 4,139 between the second and third years.

As we know that disorders of the intestinal tract cause a very large proportion of these deaths, and that the attempt at artificial feeding is usually productive of unfortunate results, too much attention cannot be paid to the subject. Disraeli, in one of his best novels, tell us that “mother’s milk makes the true-born Englishman.” Mother’s milk is undoubtedly the proper food for the new-born infant, and though I believe we have reached a degree of accuracy in the matter of food preparations and knowledge of the infant requirements that would in a great degree show itself in a diminished death rate, could we secure the thorough coöperation of intelligent nurses and mothers.

*I cannot but regret the tendency which the imperative dictates of fashion bring about, to the development of feeble women who are ill fitted to bear the burdens of maternity, or to nourish the children they bear.* Wet-nursing and bottle-feeding should be discouraged except in cases of absolute necessity.

But let us suppose that for some excellent reason mother’s milk is not obtainable and the wet nurse question has been decided adversely, upon what and how should an infant be fed?

We will at once agree that *milk* should form the basis of an infant’s diet.

It is composed of five different classes of material which are essential to nutrition; water, casein and albuminoids, salts which go to the formation of bone and secretions, fats and sugar, or the carbo-hydrates, which latter two have much the same action.

The child gets the same food as the adult, but it gets it in a condition more easily digested and more readily absorbed. More than 87 parts in a hundred of its food is water, but when the chemist tells us that 70 per cent. of the human body-weight is water, its importance is readily recognized. Then we have the nitrogenous group represented by the casein, the muscle forming; and then the fats and sugar which maintain the animal heat, and the salts for bone and secretion. Digestion is a solution by hydration, so that the elements acted upon

may pass readily through the wall of the alimentary canal, after which they are dehydrated.

You see that digestion is not merely a process of disintegration; certain secretions are requisite to bring about the chemical changes required—what are these secretions? First we have that from the salivary glands; the saliva secreted by a child under six months is at a minimum, very little is required, simply enough to lubricate, but I may say that in a series of experiments, I have recorded a child of seven days who secreted saliva which possessed sufficient diastase to convert the boiled starch used into grape sugar. This readily accounts for those infants who fatten on corn starch, much to the surprise of the family medical attendant.

As the child grows and teething begins, quite a large amount of saliva is secreted, and undoubtedly the activity of this secretion forms a prominent part in its digestive process; in other words a child that slobbers as a rule has little digestive disturbance.

From birth the gastric juice takes a prominent part. By it the curd is precipitated and turned into peptones or albuminose. All albuminous matter is so converted, and a burden by no means light is placed upon the liver, an organ more prominent in infancy than in adult life, to dehydrate this material which now courses through it, to maintain its glycogenic function, and to throw off those refuse matters that are discharged into it.

The precipitation by gastric juice of the casein presents some curious features, indeed, this matter is of fundamental importance in our studies. Woman's milk is alkaline, it is watery, its curd is precipitated in soft flakes. Cow's milk is slightly acid; its curd forms in firm, hard masses of cheesy consistence. Brush, in 1879, told us that the curd in all cud-chewing animals, of which the cow represents the class, was thrown down in masses so as to be readily regurgitated by the calf for the purpose of trituration. In the non-cud-chewers the reverse is the rule. There may be other peculiarities of the curd, chemical differences, but these have not as yet been determined.

The secretion of the pancreas is the next and the last of importance. It is composed principally of two materials, in fact a third may be added, the curdling principle; these will act in an alkaline or faintly acid solution; the first a material analogous to the pepsin of gastric juice which converts casein or other albuminous matters into peptones, such substances that have escaped the action of the gastric juice, and a *diastase* like that of the saliva which converts starchy matters and cane sugar into dextrine or grape sugar.

To the infant the gastric juice is the most important of its secretions, only such food as contains albuminous matter with soluble carbohydrates as glucose and oil in emulsion should be given—such, indeed, is milk.

We have then two matters to consider in the artificial feeding of infants—and I shall limit myself to those within the first year—one, the preparation of a food containing the elements of mother's milk, in a combination as much like it as possible; and the other, no less important, the elaboration of those secretions which digest it—an equal balance must be maintained between the two. I will confine myself to the questions of the former. With all due respect for the opinions of those who have endeavored to give us an accurate analysis of woman's milk, I feel that in basing upon it any preparation that would be invariably scientifically correct, we would fail in the very line which nature herself has clearly drawn for us, that is by not giving sufficient latitude for the different organizations of different individuals.

Granting that the human milk is the proper basis to start upon, how much food does a child require in 24 hours? So much depends on the infant; if the bowels are normal, and there is no evidence of indigestion, the breath sweet and the child seems desirous for more after it has finished its bottle, there is no reason why it should not be satisfied. A child of a month should be nursed about ten times in 24 hours, every two hours during the day and three hours during the night; at each nursing it should take from two to three ounces of milk. At the age of about three months it will probably nurse only about eight times, taking about six ounces at each feeding; at the end of about six months it will take about eight ounces. I believe that this would represent about the amount of breast milk that such a child would receive.

Having now stated the amount of food that a child requires, let us dwell at some length on the character of its diet and its preparation. In order that the directions may be carried out thoroughly they should be made as simple as possible. We all acknowledge that cow's milk has the following advantages: it serves as the basis for the preparation of a milk resembling that of the human mother; it possesses all the ingredients that are necessary for nutrition; it is easy to obtain. Its disadvantages are, that the relative proportion existing between its different constituents is not that found in mother's milk, it possesses a form of casein which forms hard curds, this casein exists in larger amounts, at least twice or more than in human milk.

It is impossible for the child to nurse directly from the cow, and therefore a certain time must elapse during which the milk undergoes possibly some alteration from exposure to the air, is liable to be tainted with the germs which produce decomposition, and this indeed is the greatest objection to its use in our large cities. It is acid, though precisely what affect this has, or what it is due to is not exactly clear to my mind.

But these objections can be readily obviated by the following means:

the milk from an ordinary dairy should be obtained as fresh as possible, mix together a half of a pint of this milk and a half of a pint of pure water, and to this should be added about two hundred grains or two heaping teaspoonfuls of milk sugar, with four grains of bicarbonate of soda; it should then be brought to a boil, after which two tablespoonfuls of cream should be stirred in, and it is ready for use, to be given by bottle or drinking cup, at about the body temperature.

We have here a mixture, which, according to Leeds, closely resembles mother's milk; we have also a preparation which has been freed by boiling from the objection stated above, in cow's milk, that due to a tendency to fermentation, and indeed the milk is rendered more digestible by it.

In new-born children or those a month or two old, we may diminish the amount of casein and increase the amount of sugar by the following means: Take one ounce of ordinary milk, three ounces of water; add one ounce of ordinary cream and about a level teaspoonful and half (80 grs.) of milk sugar. Indeed, it is better to run the risk of making a mixture with too little casein than with too much, gradually increasing strength of the milk by diminishing the water, as the child grows older; but it should also be borne in mind that as we increase the water we should also increase the carbo-hydrates, by adding either sugar of milk or some of the malted foods. Sugar of milk rapidly sours and turns to lactic acid when dissolved in water; and indeed, I believe that on this account there is little choice between it and *cane* sugar. In a case of diarrhoea, I would leave out *sugar* altogether. My own experience teaches me that with care cane sugar has not the disadvantages in most cases, in winter, that some fear.

This brings us to the subject of condensed milk; a reliable brand of Borden's or Canfield's has the following advantages: When diluted with five to ten parts of water it represents mother's milk pretty closely, with the exception that there is less cream, but to a pint of this mixture four tablespoonfuls can readily be added. The evaporation of the milk in its preparation has destroyed its tendency to fermentation to a great extent, this most certainly is a great advantage; it will coagulate in flakes, and does not require the addition of any sugar, as by analysis it is shown that when the mixture is thus prepared, the amount of sugar it contains is about equal to mother's milk. It can be universally obtained, and is useful on that score; its disadvantage in many instances is due to the cane sugar, and some object to it on the ground that it is supposed in many cases to lead to rickets.

My own experience does not bear this out, though certainly if I were to find that a child fed on condensed milk should show undue acidity, either in its stools or its breath, due to the presence of lactic acid, I would at once change its diet. This, careful watching should avoid.



In summer weather the presence of cane sugar, which is a decided laxative, is objectionable, and herein exist the great difficulty of the proper selection of a food for that season.

In order to counteract any tendency to rickets, I usually incorporate in the milk some lime—either lime water, or still better, I think, the lacto-phosphate and carbonate of lime; indeed I would establish this as a rule in the preparation of all milk foods that require the addition of sugar. In my opinion, lime water falls far short of reaching the good claimed for it. When we come to consider that only *eleven* grains of lime are found in the pint, two tablespoonfuls will contain about one-third of a grain, too small an amount by far to be of any service whatever in either neutralizing any undue acidity, or of any service in supplying lime to the tissues; it will need equal parts to accomplish the former; the probability is that it is the dilution of the milk which is beneficial in cases where it is thus used.

I have made some very interesting experiments in this line with Mr. Louis Genois, the result of which is as follows: To a half of an ounce of ordinary milk, eight drops of dilute muriatic acid were added, and a curd was thrown down irregular and lumpy. The same milk was taken, and to half an ounce a half grain of lacto-phosphate of lime was added, and the same acid used; the precipitate was smooth, fine, and in fact creamy. The solubility of this preparation of lime, its action on the curd, and its value in counteracting the great tendency to rickets, which I believe exists in all hand-fed children, gives the matter great importance.

For this reason I have had made for me some compressed tablets, each containing a certain proportion of sugar of milk, lime in a soluble form and carbonate of lime, which will, with a small amount of soda, neutralize any undue acidity of the milk. A certain quantity of water is taken, brought to the boiling point, and to this is added the needed amount of milk, say an equal part, in which has been dissolved two or more tablets, and to this is added the necessary amount of cream, and given to the infant in nursing-bottle or by spoon, at the required temperature. Certainly the most stupid mother cannot fail to follow directions so easy. I may say here that this food would be most valuable for nursing women; the loss of teeth, so common during the child-bearing period, is due to a want of lime supply. Nursing mothers should take lime for themselves and for their milk.\*

Let us study for a moment the question of the "fresh evaporated milk," served daily in some cities by the Canfield Company, and which, I think, offers for the future the best field for infant feeding, in those cities where it is daily supplied, especially in summer time.

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\*These tablets are prepared by J. J. Ottinger, Twentieth and Spruce streets, Philadelphia.

The following is its analysis, as given by Prof. Chandler, of New York:\*

Water,	52.74 +
Butter,	13.70 +
Casein,	15.04 +
Sugar,	15.80 +
Salts,	2.71 +

If we add seven (7) parts of water previously boiled or filtered, we have a mixture of which the following will represent the analysis:

Water,	94.8
Butter,	1.72
Casein,	1.88
Sugar,	1.98
Salts,	.34

Then, taking an analysis of mother's milk:

Water,	87.16
Fat,	4.28
Casein,	1.04
Sugar,	7.4
Ash,	.1

We find that it will be necessary to add to the half pint of the above mixture of evaporated milk, two (2) tablepoonsfuls of cream and two (2) heaping teaspoonfuls of sugar of milk. This will be equal to cow's milk, with about the same percentage of casein as mother's milk. The absence of cane sugar in this preparation renders it most valuable in summer in our large cities when diarrhœa is prevalent. Indeed, in such cases half of an ounce of this milk in a graduated glass with four ounces of water, previously boiled and filtered, given at the temperature of the body, about 99°, without adding cream or sugar, would in many cases be a most suitable diet. If the bowels are loose, lime water could be used. Unquestionably disorders of the intestinal tract are produced by *fermentation* and also by *mechanical irritation* of undigested curds, and this is often due to not alone the method of preparing the food, but also to the deficient supply of the gastric juices. If a large supply of gastric juice could be encouraged, both of these causes would cease to exist, as the acid mixture is antiputrefactive as well as digestive. Indeed, the acid treatment of summer diarrhœa is an admirable and recognised one, but the limited

\*1 quart of water weighs 2.082 pounds.

1 quart of milk (sp. gr. 1.035) weighs 2.149 pounds.

420 quarts fresh milk=924 pounds.

Deduct 330 quarts of water, removed by evaporation=68.7 pounds.

We have 100 quarts condensed (evaporated milk)=237 pounds.

Now, 430 quarts (926 pounds) fresh milk at 12 $\frac{3}{100}$  per cent. solids contains 116 pounds solids; 100 quarts of condensed milk (evaporated) (237 pounds) at 46 $\frac{4}{100}$  per cent. solids contains 110 pounds solids.

C. F. CHANDLER.

Report of Commissioners Public Charities, New York, 1871, p. 216.

amount of pepsin and hydrochloric acid that we can administer as a corrective is in many cases insufficient. On this account we are obliged to use some means so as to prepare the milk and destroy its ferments, and to diminish its casein, or so affect it as to allow precipitation in fine masses. The former is readily accomplished by boiling, or by subjecting the milk to heated steam, the latter by several means now in vogue.

The *first*, by rendering the milk alkaline, which retards in a measure the coagulating property of the gastric juice.

The *second*, by diluting the milk with water, which diminishes the percentage of casein.

The *third*, by thoroughly incorporating with it some material, such as gelatine, or a small amount of starchy matter, such as oatmeal water, that will intimately incorporate itself in the casein as it falls, and thus allow the gastric juice to completely attack it; and *fourthly*, to partially predigest the casein, peptonize it as it is called, before it enters the stomach.

We have in addition to these, various other preparations, which are sometimes added to the milk to render it more nutritious, for example, soluble carbo-hydrates, as dextrine, glucose, or substances rich in albuminous matters. This in fact covers the whole ground of the various preparations used in the bottle feeding of infants, and you will thus see that they all have some scientific basis to work upon, and their choice questions of expediency and reliability, which should be studied in connection with each particular case.

Let us study these matters *seriatim*. The experiments of Richmann, and indeed our own experience, show that boiled milk is more digestible than raw. For all city children under a year, and for those older who are passing through the heated term, with whatever form of diet in use having milk as a basis, I would certainly advise that the milk be brought to a boil, or at least thoroughly scalded. Of course, if condensed or recently evaporated milk be used, this is not necessary.

Boiling has another great advantage; it is germ-destroying, and possibly milk contaminated by the contagium of scarlatina, typhoid fever, or even tuberculosis, may be rendered harmless thereby. Let us now take up in turn the *four* divisions of our subject:

1. Cow's milk can readily be rendered alkaline by the addition of lime water in large amounts, soda or potash, and the curd affected thereby. I think the importance of alkalinity is somewhat over-rated, that is, the tendency seems to be to put too much soda in the milk; all that is required is to make it neutral, even for peptonizing purposes.

2. Dilution with water, which should always be previously filtered, to the amount of once or twice its bulk, will so affect the percentage of casein in cow's milk as to bring it to that of the woman, and also

will control the precipitation of the curd, even should the milk remain slightly acid. But this will also reduce the amount of cream and sugar; these must be added.

The question of the digestion of fat needs but a few words. It is greatest in demand at the time when animal heat is the most required, that is during the winter months, the fats and soluble carbo hydrates when supplied in excess are stored for future use; their excess in hot seasons is productive of intestinal disorders. In such cases a change to albuminous water, made by dissolving the white of egg in water makes a nutritious diet and is a valuable change. The oils when stored away give a condition of body which is firm and elastic to the touch, and when this reserve is called upon the emaciation is gradual. On the contrary, when the storage takes place from excess of glucose, the fat is not *staying* and its disappearance is sudden. This is well seen in children fattened on condensed milk to which no cream has been added. It is admirably described by Dr. Weir Mitchell in his book.

Lessen then the amount of cream and sugar for the summer season, increase the nitrogenous elements, and render it as readily digestible as possible.

3. There are certain materials which require other juices than the gastric secretions to digest them, and which mingling with the curd allow the gastric juice to precipitate it slowly and thoroughly attack it. These are the cereals. The starchy granules must be thoroughly broken up by boiling or by dry heat, so that either the saliva or the secretion of the pancreas can change the insoluble starch into soluble grape sugar. The infant secretes but little saliva and probably but little of the pancreatic diastase; on this account but a small amount of starchy food should be given it. The milk can be diluted with its bulk of water, which can be previously thoroughly boiled with either ground barley, oat-meal or baked flour, in the proportion of a desert-spoonful to the pint, the milk poured in while the water is boiling, the whole boiled together for a moment and then strained. This can be sweetened, a small amount of cream added, and it forms an excellent food for a child after its fourth month; earlier than that I would prefer the plain milk diet.

The starch should always be placed in a position so as to readily facilitate its conversion into grape sugar, which can be done either by heat or by malting.

Fothergill tells us "By heat the cook cracks the starch granule so that the solvent diastase can readily act upon it. So far, so good; but heat does something more. It has an actual solvent action, and heat will, if sufficient, cause conversion of starch into dextrine. A thoroughly well baked flour if subjected to the iodine test under a microscope will readily show this.

"When a large quantity of raw unconverted starch enters the

stomach it is a burden to that viscus. The gastric juice has no effect upon starch, and the starch granules merely embarrass the action of the stomach until they find their way out of it by the pyloric ring.

"The advantage of the numerous prepared foods—whether babies' foods or invalids' foods—which are all more or less compounds of starch which has been, to a certain extent, predigested either by baking or the malting process, lies in their ready digestibility. A touch of saliva is enough to complete the conversion of such carbo-hydrates, and the soluble matters pass out of the alimentary canal, and the stomach is not burdened with a weight of undigested starch impeding its work.

"Starch granules which have escaped the saliva interfere with the solvent action of the gastric juice on albuminoids."

4. The casein can be previously partially digested by adding to the milk the pancreatic secretion, that which is analogous to the pepsine of the gastric juice, but which is deprived of its curdling element, and which acts in an alkaline or faintly acid medium.

The peptonizing process, or that of converting casein into peptones, can be arrested by boiling the milk just before it assumes a bitter taste, which completely digested material of this sort has.

The value of Fairchild's extract of pancreas in its relation to artificial feeding cannot be overestimated; the milk should be made very slightly alkaline by a small amount of soda. I think too much soda is usually recommended for infant use.

The peptogenic milk powder contains a certain proportion of extract of pancreas, sugar of milk, soda and salts, as suggested by Professor Leeds, and when used with cow's milk and cream forms a combination like mother's milk with the curd partially digested.

I sincerely trust that I have succeeded in convincing you so far that the question involved in the diet of an infant within its first year is simple enough. It is not by making these matters complex that we will accomplish our purpose—not by surrounding them with the impenetrable network of scientific analyses. Our *sums* should be done in private in the laboratory. Our instructions should be made so simple that every mother or nurse can carry them out. But let me for a moment bring before you a tangled mass of material which we will endeavor to unravel; for I know much confusion exists in the lay mind in regard to it—that of the preparations used in the artificial feeding of infants—*baby foods*. We can consider them under three headings.

The *first*, the milk foods. I have already spoken of condensed milk, and need dwell no further upon it. Nestlé's food, which contains condensed milk, dried, with starch and glucose, is largely used. Its composition, according to Stutzer of Bonn, the analysis of which I attach to this paper, would lead me to recommend it only after the child has reached the fourth or sixth month. Carnrick's soluble food is also

valuable on account of its large amount of albuminoids and fats ; it also contains milk which has been peptonized. The amount of starch which is shown in the analysis would lead me to recommend its most extensive use after the fourth or sixth month. Containing, as it does, a relatively large quantity of bone forming material (lime, phosphoric acid), it should stand very high as a food, and, indeed, in many cases might be used by very young infants. There are many other foods under this heading, but I will be obliged to refer you to the article on diet in J. Lewis Smith's book, page 58. 6th edition.

The *second* division comprises what are known as Liebig's foods. By this is understood dried preparations composed of grain, which has with it a certain amount of diastase or malt, and part of which has been converted into dextrine or grape sugar. They also contain albuminoids, which, as you know, are the nitrogenous elements, like the curd of milk. Some of these foods contain, to a certain extent, an amount of starch, which in many of them is in a condition readily to be converted by heat and moisture into a soluble grape sugar. Their efficiency and digestibility depend on the amount of glucose and albuminoids which they contain.

As a rule, they should be used with milk after the child has reached its fourth month, though at a very much earlier period in many cases they have been found very useful.

From the analysis of Stutzer, the most recent made, I would place Mellin's and Horlick's food in advance of the others, on account of the large amount of the soluble hydro-carbons and albuminoids, and an exceedingly small amount of free starch. Of course, these foods should be used in small quantities, and always with milk ; at first they should be looked upon as so much sugar, only possessing, in addition to the grape sugar, certain very nutritious materials (albuminoids), which ordinary glucose has not, and also the bone forming materials which we find in the cereals.

We now come to the *third* division, the farinaceous group, known as "wheat foods," including Imperial Granum and Ridge's food. They, in fact, are nothing more than starch which has been subjected to a more or less careful heating process, and can be used for children after four months, as I have suggested in a former part of this paper, when speaking of starches to aid the digestibility of casein. The starch granule in many of them has been thoroughly broken up by a careful heating process, and thus reached an advanced point towards its digestion in such foods as Hubbel's and Blair's wheat food.

I beg of you then to bear in mind that milk alone, with more or less alteration in the percentage of its ingredients, should serve as the food for a babe for at least two months.

The bringing up of children by the bottle is by no means as difficult as many think. All that is required is a thorough understanding of the object in view, by the doctor, nurse or mother, and thorough clean-

liness and regularity, and an intelligent carrying out of matters that routine will soon render very simple. *But bear in mind that there can be no cast-iron rule by which all children are fed. Each child differs from another, and it is he who makes a study of each special case who will be most successful in accomplishing the purpose desired.*

1504 Walnut street.

BY DR. STUTZER, OF BONN, GERMANY.

	Nestlé's Food.	Carrick's Soluble Food.	Mellin's Food.	Well's, Richardson & Co.'s Lactated Food.	Horlick's Food.	Dr. Ridge's Patent Food.
Fat,.....	4.86	5.00	0.50	2.19	0.60	1.27
( Protein substances (albuminoids),.....	11.48	18.22	8.34	9.05	11.30	8.76
( Soluble hydrocarbons (sugars, dextrin, etc.),.....	41.22	26.87	60.89	25.52	65.92	1.79
( Insoluble hydrocarbons (starch, etc.),.....	35.47	40.87	18.40	52.92	13.12	78.68
Cellulose,.....	0.10	.....	0.58	1.54	0.55	0.71
Water,.....	5.34	6.14	7.76	6.52	5.75	8.31
Salts and inorganic constituents,.....	1.75	2.99	3.53	2.26	2.76	0.48
Amount of nitrogen in protein substances,.....	1.83	2.915	1.335	1.448	1.809	1.403
Amount of protein substances readily digestible,.....	11.09	16.45	7.38	8.35	10.85	7.97
Proportion of nitrogenous alimentary substances (Protein - 1),.....	1:7.7	1:4.4	1:9.6	1:9.2	1:7.1	1:9.3
The inorganic constituents contain {	Lime,.....	0.390	0.645	0.300	0.060	0.000
	Phosphoric acid,.....	0.630	0.874	0.583	0.421	0.260

From *Pharmaceut*, Central Halle, Berlin, 1886, No. 8; *Pharmac. Rundschau* (New York), 1886, page 89; *Buffalo Med. and Surg. Journal*, May, 1886, page 472.

#### DEATHS IN PENNSYLVANIA AND NEW YORK FOR YEAR 1880.

		Under one year.	One year.	Two years.	Three years.	Four years.	Total under five years.
Pennsylvania, . . . . .	Male, .	7,694	2,274	1,510	1,034	782	13,294
	Female, .	6,048	1,920	1,310	918	780	10,976
New York, . . . . .	Male, .	11,335	3,139	1,719	1,113	821	18,127
	Female, .	9,179	2,788	1,492	1,674	781	15,314

Total deaths, in two States, under 5 years of age, 57,711.

Table showing for the United States and for 31 registration cities, the living population under 5 years of age, the number of deaths, and the number of deaths per 1,000 of living population, compiled from U. S. Census Report for 1880.

AGES.	UNITED STATES.			31 REGISTRATION CITIES.		
	Living population.	Deaths of corresponding ages.	Proportion of deaths per 1,000 living.	Living population.	Deaths of corresponding ages.	Proportion of deaths per 1,000 living.
Under one year, . . .	1,447,983	175,184	120.9	165,469	44,249	267.5
One year, . . . . .	1,258,965	56,816	45.2	132,933	11,623	87.4
Two years, . . . . .	1,427,086	33,417	23.4	162,715	5,977	36.7
Three years, . . . . .	1,381,274	21,276	15.4	157,646	3,898	24.7
Four years, . . . . .	1,401,217	15,831	11.3	156,913	2,824	17.9
Under five years, . .	6,914,516	302,624	43.7	775,676	68,571	88.4

*Remarks.*—In considering this table it should be remembered that the reports of deaths for the whole United States are defective from 15% to 30%, while for the cities they are nearly complete. It will be seen that for each 1,000 living under 1 year of age in the United States at large the proportion of deaths was 120.9; while in the cities the number of deaths per 1,000 of the same age was 267.5. Under 5 years of age the proportion of deaths in the country at large was 43.7 per 1,000 of living population, while in the registration cities it was 88.4 per 1,000. In other words, the mortality of children under 5 years of age, according to this table, was about twice as great in the cities as in the average of the whole country.

Table showing for the United states, for Massachusetts and for the principal countries of Europe, the number of deaths up to 5 years as compared to 100 deaths of all ages:



	Under one year.	One to five years.	Year.
United States, . . . . .	23.24	16.90	1880
Massachusetts, . . . . .	20.37	14.23	1880
Italy, . . . . .	24.77	20.60	1880
France, . . . . .	17.59	8.83	1879
Prussia, . . . . .	32.25	15.96	1880
Bavaria, . . . . .	39.48	10.71	1880
Saxony, . . . . .	42.00	15.34	1880
Thuringia, . . . . .	31.71	15.30	1880
Wurtemberg, . . . . .	41.78	11.92	1880
Baden, . . . . .	33.77	12.33	1880
Alsace and Lorraine, . . . . .	28.74	11.96	1880
Austria, . . . . .	31.62	16.51	1880
Croatia and Slavonia, . . . . .	30.44	19.37	1880
Switzerland, . . . . .	24.34	8.97	1880
Belgium, . . . . .	25.99	13.09	1880
Holland, . . . . .	31.01	14.10	1878
Sweden, . . . . .	19.58	13.68	1880
Norway, . . . . .	20.59	12.21	1878
Denmark, . . . . .	23.49	12.19	1880
Finland, . . . . .	25.55	18.73	1880
European Russia, . . . . .	38.82	20.81	1875
Spain, . . . . .	22.93	25.20	1865-70
Greece, . . . . .	18.09	17.30	1880
Roumania, . . . . .	23.54	19.33	1879
England and Wales, . . . . .	25.48	16.98	1880
Scotland, . . . . .	20.31	17.37	1878
Ireland, . . . . .	13.98	11.60	1880

*Remarks.*—It will be seen by this table that as regards the proportions of the infantile to the whole mortality, the United States is near the mean, being exceeded in the proportion of deaths occurring under one year of age by Austria, Belgium, England and Wales, Germany, Holland, Italy and European Russia, while France, Sweden and Norway, Scotland and Ireland, have a lower rate.

### III. Economic Sanitation.

By ALBERT L. GIBON, A. M., M. D., *Medical Director U. S. Navy.*

As in nature all force, manifested in energy or power, is obtained through the equivalent exchange of some other form of impetus, so, even in the ordinary transactions of life, we find that whatever is efficient is the outcome of the expenditure of a proportionate amount of labor, or is purchased by labors equivalent, money. There are make-shifts and shams and Brummagem wares that are cheap, and their very cheapness is the measure of their worthlessness. The veneering pleases the eye—but there is nothing stable and enduring to benefit those that outlive the moment.

Sanitation, while not a commodity in the sense of a concrete object of barter, has its financial value—to be estimated like other mundane products by the cost of human skill and labor expended in its accomplishment. Unfortunately, the popular preference for cheapness without regard to worth, has led to an arbitrary valuation of the health-service not commensurate with its actual importance. The distinguished pleader before the Supreme Court of the United States receives a fee of five or ten thousand dollars for an apparently off-hand conversational discourse before a number of elderly gentlemen in silk gowns, but nobody questions the fitness of the reward, which comes after a lifetime of learning and experience. The president of a great corporation is given the salary of the ruler of a State, and seems only to have to sit leisurely a few hours daily in a handsomely furnished office, but the intelligence, aptitude and training which fit men for such a position are known quantities, and their value recognized. But, were it ignorantly believed that any glib talker could fill the pleader's place, or any well-mannered and well clothed individual could make a successful financial leader, the idea would be no further from the truth than that superficial estimate of sanitary work, which looks upon it as a matter to be accomplished by the outlay of a few hundred dollars and the employment of one or two subordinate clerks.

Sanitary establishments, like other important undertakings, involve qualified control and skilled labor, and both have easily computed market values, the requisite brain force and muscle force being the resultants of so much education and application; but, up to this time, through the disinclination to stint in ornament and luxury, the expenditures for sanitary objects have been reduced to a minimum, and the results obtained have been correspondingly limited. Nowhere is this more manifest than in places under the control of the State and National governments. The wretched sanitary defects of the Treasury Building at Washington, suggested an examination two or three weeks ago, which revealed a mess of hidden abominations in the Winder Annex to the War Department; and a just published report of the insanitary condition of the Ohio State House at Columbus, reads like a romance of horrors—with filth as the chief villain, and ignorance and neglect his wicked coadjutors.

The purport of the little I have to say on this occasion, is that sanitation—the thorough effective sanitation which saves life, secures health, contributes to wealth, comfort and happiness, is not cheap; and that the mistake which health officers have made and are still making, is accepting, under feeble protest, if any, the petty sums, grudgingly doled out by legislative bodies, as sufficient to accomplish, in any sense, the objects of their establishment. And, first, it ought to be understood that sanitary tinkering is worse than absolute neglect. A house, imperfectly trapped, is more dangerous than one reeking with

foul smells through the false sense of security given by its assumed protection; and the health board with its munificent appropriation of a few hundred or a thousand, or even two or five or ten thousand dollars for rent, salaries and executive acts, is a health board in name only. and the community under its charge fancies itself clean because it wears a clean shirt over a dirty body and festering sores.

Much time and argument have been expended in the American Public Health Association, State sanitary conventions, citizens' auxiliary sanitary societies and like assemblies, in establishing abstract propositions, that health is wealth, that the public health is the public weal, that an ounce of prevention is worth a pound of cure, that it is cheaper to keep out disease than to drive it out—and if the public are ever to be educated in the rhetoric of hygiene, it ought by this time to be in the Sanitary Sixth Reader; but it is this same public which has also been taught that the wages of sin is death, that what does it profit a man if he gain the whole world and lose his soul, that the sins of the fathers are handed down to the children of the third and fourth generation—and yet prisons are never empty, nor gallows idle.

It is futile, therefore, to depend upon mere preaching to bring about that change of heart that will move men to do what they ought for their physical welfare. Society must have *faith* in its medical men, and accept as truth what those qualified by education and experience tell them, and do what they advise—advice, the honesty of which can not be gainsaid, since aiming to banish disease, it actually lessens the professional emoluments which sickness brings. Sanitary instruction must now be supplemented by sanitary execution. The exposure of the evil to be corrected must be accompanied by the peremptory statement of the remedy, and in no uncertain terms as to quantity and cost. The Secretary of the State Board of Health of New Jersey says, in his report for the past year: “While it is still necessary to gather information for diffusion among the people, it is now far more important to educate individuals in the technical work of oversight, inspection and execution, and to perfect the details of sanitary administration.” And this is the paramount duty of health officials—to put into practice what they have so long preached, which is not as easy a matter as it seems. The intelligent head may be there, but the many hands are lacking to do its bidding. The sanitary mechanism may be complete, but if there be no fuel to start its fire, it can not move; and on this humble substratum of the material all human efforts rest: the doing is dependent upon the means of doing.

Sanitarians have perhaps erred in proclaiming so widely that sanitary science is a very simple matter, which like phonography and the Spanish language, needs only the alphabet to be mastered, that the student may know in one lesson how to spell words of any number of syllables. Fresh air, pure water, good food, a clean skin, sound sleep,

temperance and exercise, are the seven simples, which like the straight lines, and curves, and dots and dashes, are able to express any combination of circumstances. But for all that, an intelligent head, a skilled hand, and a watchful eye are needed to combine them effectively. There are some physicians—it is true not of a very high order—who take pains to announce that they are therapeutists and not hygienists. This, partly through the shallow idea that there is greater dignity in treating a sick man than in preventing his getting sick, but chiefly because, in the language of one, he feared that the dissimination of sanitary knowledge would cause lawyers, preachers, merchants and mechanics to know as much as himself, and that, therefore, his occupation would be gone. This at least is certain, that the physician whose horizon hems him within a circle of such small diameter, does not himself possess the requisites for a capable and efficient health officer. Without a special dialect of polysyllabic Greek, or an exclusive scientific technique to be gotten by heart, the sanitary service demands intelligence, information, judgment, skill in organization, executive ability, readiness of resource in emergencies, firmness, fearlessness, honesty, zeal, enthusiasm and self-abnegation, which are not every-day qualities nor everybody's characteristics. Recently said the Governor of a great State to a famous officer of a State Board of Health, "What are we to do should you die? Are you training any one to take your place?" The State Boards, which have accomplished the most satisfactory results and given preventive medicine its proper place in the van of scientific medicine, owe their success to their energetic and accomplished officers. These need not be named. Whoever has attended the meetings of the American Public Health Association—the common ground on which these men meet once a year—will recognize them. By their works they are known. All of them are able men—some with idiosyncrasies and personal peculiarities, which you or I may not like—but all of them zealous, earnest, indefatigable in the cause of public health. They have won their places by their merit, and hold them through its popular recognition, some of them already so long that State, cause and individual have become convertible terms.

Such men are the first essential to successful sanitary work, and it is greatly to the credit of our people that political party, religious creed and professional dogma have not controlled the personnel of those State Boards, which have accomplished the most marked results. Very recently we have witnessed the gratifying spectacle of the remaining members of a State Board, the Governor of the State, municipal authorities, neighboring sanitary organizations, press, pulpit, and people, uniting to protest against the resignation of a health officer, who had given so much time, thought and means to the board over which he presided, that he had almost forgotten there were domestic claims upon him as a man of family.

And this suggests what I desire to say as to the necessity for compensatory salaries for these men, who sacrifice personal interests and the opportunities for strictly professional gain, in the cause of public health. The sanitary service demands the ablest minds in the medical profession, and like the judges, who are drawn from the leaders of the legal profession, they should be secured a fixed income, befitting the dignity of their office, and enabling them to provide that comfortable maintenance of their families during their lives, and provision for their support after their death, which is every just man's ambition. While adequately rewarded for their services, they should be guaranteed against this world's vicissitudes. The health officers who feels the pressure of the *res angusta domi* can not be expected to give that altruistic attention to his duties which is necessary. Neither should his remuneration depend upon the receiving of fees, which, if munificent, attract a brood of political cormorants, who expect to be fed from them. The evil sound of harpies' wings should never be heard about Hygieia's temples.

Unless the health officer's position is dignified and exalted, and correspondingly requited, only incompetent make-shifts will after a while be obtained, whose perfunctory performances will have neither value nor influence. Not yet have the sanitary officials of any State received the full measure of distinction and pecuniary reward to which their labors entitle them, but in their zeal for the development of this yet new branch of the public service, they have given their time without question of pay, and been content in the hope of winning the popular gratitude. Here, as in many other instances, calling for evidences of the loftiest humanity, enlightened Christian races may learn a lesson from the benighted pagan. Some of you may have heard the interesting address of the Secretary of your new-born State Board of Health, in which he portrayed the public state of the laurel-crowned and purpled toga-ed sanitary inspector of old Rome, and the popular ovation he received as his chariot passed on his daily round of duty. How many citizens of Philadelphia think to salute the chief health officer by lifted hat? How many know either his face or his name? Great as any judge or lawmaker, greater than any general or admiral, the minister of health is of right *primus inter pares*, the chief physician of the State, on whose wisdom its prosperity and security depend. His emolument, therefore, should be no insignificant sum, grudgingly given, but a generous competence bestowed upon him as the archiater, who has the power to make more of his fellow beings happy in the enjoyment of sound health than any other single individual. Practitioners of curative medicine, specialist therapeutists who limit their work of single organs and apparatus, pile up gold and greenbacks in stacks, while the man who would keep disease away from the community not only sacrifices his opportunities for personal enrichment,

but is not even recompensed for his actual work in the service of the public.

There is the same need for the liberal remuneration of subordinate health officials as for that of their seniors, to secure the efficient and zealous performance of their duty. The delinquent or venal sanitary inspector is as much of a nuisance, in the sense of causing damage, as any he is called upon to abate. In the service of the public health, as in the ministry of morals, there must be sterling integrity and unadulterated honesty; but it is asking too much of either that, in the absence of sufficient pecuniary return, they should be content with an uncertain quantity of the homage and gratitude of the community, which should supplement, not substitute, the former.

Well-paid, permanent officials are absolutely necessary to an efficient sanitary service, but the most liberal salaries and the utmost fixity of tenure of office will not enable the most competent officers to accomplish anything without command of abundant means, and *abundant* is what Webster defines it to be, "fully sufficient." The varying needs of different seasons and conditions are not to be met by the small sum which is annually appropriated for sanitary purposes. Let us cursorily recall what a health board has to do.

It has first to make a thorough sanitary survey of the city or town, and this involves what is termed a house-to-house visit and inspection of every occupied dwelling, factory or other resort of human beings, whether it be a Walnut street mansion or a Bedford street hovel—of every school house, church and theater, of every stable, cattle-yard, hogpen and wherever else animals are congregated, and of every warehouse and storage place of perishable materials; the actual examination of every bedroom, attic, kitchen, basement and cellar, of every storeroom and out-of-the-way closet, of all alleys, yards and outhouses and the critical inquiry into their drainage, sewerage and ventilating systems. Velvet carpets and downy beds are no safeguards of health against a siphoned or unventilated trap, nor can the costliest and wisest master in medicine undo the damage wrought by one open soil-pipe joint or one broken drain under the rich man's basement—damage, perhaps, as great as that from the soggy, rotten floors of a rag picker's filthy, underground den. The mere labor of exposing and opening to the light and air every unclean and unwholesome apartment, of requiring them to be drained if wet, of having their decayed wood taken out, their noisome rubbish removed, their walls white-washed, of having accumulated refuse carted away from obstructed alleys and back-yards and neglected lots is more than any existing health board can do thoroughly with the means at its disposal, and this is only part of its duty.

In most cities, notably your own, the supervision of the cleaning of the streets is a task for Hercules, and the proper performance of this duty implies not a mere superficial sweeping of a few principal thorough-

fares, but the actual *cleaning* of every street, by-way and alley. If every scoffing councilman will dig from between the cobble-stones of the street before his own dwelling some of the fetid slime which has lain there for years, and bring it within smelling distance, he will need no other inducement to vote a liberal appropriation for this one office of the health department, and if he will carry it to some friend, with a microscope, who can show him the living swarms which multiply there, he will double the appropriation. The experiment may likewise be commended to the doubting Thomases among the citizens, who may thereby learn to control their selection of municipal legislators, strengthening their convictions, if need be, by lingering a moment over a corner sewer inlet or by going from the fresh out-door air into their own closed cellar, or for that matter by merely entering some crowded school-room an hour after the day's exercises have begun.

Nor are the inspection of houses and cleaning of streets all that come within the province of the sanitary officer. He must see that every newly erected building is properly plumbed—and I would like to know how much money this great municipality annually appropriates for this one matter of the inspection of plumbing. Consider what it involves: The critical examination of the drainage and plumbing plans of every building erected in the city, the personal inspection of every house in course of erection, alteration and repair; and in Washington these inspections are thrice repeated—first when the iron drain-pipe is laid underground and is filled with water and required to remain full until seen by the inspector; next when the vertical and waste-pipes are attached and these likewise filled with water and required to remain so twenty-four hours to discover leaking joints; and third, after all the fixtures, water-closets, bath-tubs, wash-tubs, basins and sinks are in place, properly connected, the water turned on from the street and everything in working order. Is there any one part of this procedure which is unnecessary? Is it a duty that should be entrusted to careless or incompetent? And yet, what provision have you made to secure careful and competent hands to do this work?

But the health officer's duty does not stop at the city's confines. He must follow the subterranean streams of sewage to their eject upon river or sea, and thence until they are dissipated beyond harm to any human being. The thin veil of earth which hides them from sight is but a cobweb cuirass against the germs and noxious gases that are sought to be imprisoned.

Nor is this even yet all the health officer is expected to do. He must see that the garbage from the kitchen, the offal of the slaughter-house, the muck of the stable and drove-yard, the waste products of the factory, the *débris* of every human industry, and the dead of the animals, who, whether the foe or slave or friend of man alike partake his civilization only to experience his neglect, are all removed. He has, besides, to prevent the sale of spoiled meat and other unwhole-

some food, to inspect the vegetables from the kitchen-garden and fruit from foreign ports, and discover that which is unripe or rotten, to detect stale fish and oysters and other marine products, whether in the fisherman's smack or on the dealer's stall, to arrest the vendor of impure milk and expose frauds in butter and cheese, and to guard against the pollution of the water supply ; for since by civilization earth, air and water are all contaminated, by civilization should this befouling be removed. Even the drugs, on which men lean to cure them of the evils they have invited, are also adulterated, though this is a counterfeit with which, perhaps, in the interest of health, the sanitary officer will do well not to meddle.

Our list is long enough of sanitary exigencies. Is it reasonable to suppose all this can be done for any petty sum? As well try to economize by feeding the hungry child with half a loaf when it needs a whole one. Our rough outline of the parts of a health organization, calls for sanitary inspectors of dwellings, schools and factories, inspectors of plumbing, inspectors of sewers, inspectors of streets, inspectors of food, meats, vegetables, fruit and marine products, inspectors of milk and inspectors of water, garbage collectors, pound masters, and the bureau officers to control and direct all the various operations, record their results, and collect the vital statistics of births, deaths and disease, which are now regarded as the gauge of the condition of the social system and the measure of its vitality.

Should any health organization hesitate to declare that an elaborate and complete sanitary establishment can only be maintained at a considerable expense, and that it is a false economy which, through neglect, invites a hundred times the actual expenditure of money to repair disaster, a thousand fold its value in interrupted business and diminished incomes, and immeasurable calamity in stricken hearts and desolated homes? It is not impossible to bring to each individual the realization of the fruits of parsimonious sanitary administration. Estimate the expense for medical attendance, for medicine, for special food, and nursing during the progress of a case of typhoid fever, and add to it the loss from interrupted occupation, if it be the provider of the family who is ill, and the instances are innumerable where imperfect plumbing in very stately dwellings has brought all this upon its luxurious occupants as where the foul cesspool beside the laborer's cabin has poisoned both the water from the well and the air, to whose stench the senses had been blunted. Would one dollar a year for each individual in this great city be considered a burdensome assessment as assurance against this one form of preventable disease—but does your Health Board have anything like the million dollars this would signify? I do not mean that rich and poor alike should contribute an equal numerical quota—that the poor man with wife and eight children should give ten dollars of his hard earnings, and the rich man, with his wife and the rich man's average of but one or two



children, only three or four dollars. In the natural order of things, the wealthy must give of their abundance for the general good ; but in estimating the sanitary requirements of a community, rich and poor young and old, are so many similar units, with such equal claims to protection against disease as the social organization provides for person and property against violence and anarchy.

A child is killed by diphtheria, and the cause discovered in its own dwelling, or, more likely, in the school-house, or if an operative in the factory, and through that child another and another victim fall. Can any money value express the real loss from this stint of sanitary supervision against this one preventable disease ? Will a dollar a year weigh but as dust in the balance against it ? Will the single dollar on one side of your profit and loss account appear as anything but an insignificant pen-stroke against the long array of figures required to balance the debit on the other page ? Not long ago, a New York shop-keeper dropped a ten dollar gold piece, and carelessly handled a lighted candle seeking it, setting fire to his place, and causing a loss of ten thousand. Immeasurably more disastrous is the economy which is all eyes after this one dollar, and is carelessly blind to the spark which kindles into a devastating conflagration. The Secretary of your State Board has put into significant black and white the cost of your last epidemic of small-pox, that of 1870-72, and the small sum which might have prevented it: on the one hand twenty-five million dollars; on the other, twenty thousand. There are many here old enough to remember the yellow fever outbreak of 1854, for which economic sanitation was to blame, and which, in a few months, inflicted upon this city a loss exceeding a century's appropriations for sanitary objects.

City, State and Nation vote liberally for educational purposes, and the people of this country clamor for general education as one of their inalienable rights; but neither National Congress, State Legislature, city council, nor the people, stop to think that that education, which aims to develop and improve the mind, while wholly ignoring the body, will surely be pernicious to the child and disastrous to the race. An article in the *Chicago Current*, by LeRoy Griffin, pertinently contrasts the consideration given to cattle and to children. An outbreak of pleuro-pneumonia or hog cholera, promptly becomes the object of international concern, and commissions are appointed with the widest latitude of expense to investigate and provide a remedy ; but scarlet fever or diphtheria may decimate a community, and the health officer is left to his own resources, and these are no money and little authority

I do not feel that I am here wholly in the garb of guest, for though so long expatriated, the spots which marketh the native Philadelphian cannot be erased, nor the clipped vowels from my tongue ; consequently I do not abuse your hospitality, while congratulating you on the

institution of a State Board of Health, in expressing the mortification I have felt that this great Commonwealth has been only the thirty-second among these State Republics in learning that an efficient Bureau of Health is an indispensable part of the governmental mechanism. The regrettable example, which this Keystone of the Union has set with such pernicious influence, is aptly illustrated by the promptness of its neighbor, Ohio, in following its later better patterning. To-day, only five States, Florida and Vermont, Nebraska, Nevada and Oregon, are without State Board establishments, which Massachusetts, to her lasting credit, initiated in 1869, and California, then Minnesota, Virginia, Michigan, Wisconsin, and others successively imitated.

Now that you have a Board, and one admirably officered by experienced sanitarians, it behooves you, citizens of the Commonwealth, to see that it is given power to do its work by your generous support. If you would reap abundant harvest, the seed must be thickly sown. The perfected and costly apparatus of your fire department is not required for every incendiary flame, which often a bucket of water or a hand grenade would have extinguished, but the havoc which may be at any unexpected moment, were that perfected apparatus not ready for any emergency, would in a single day exceed its cost for a generation. At this very moment, grave and reverend senators are hesitating to authorize the expenditure of a few thousand dollars—less than the cost of a congressional funeral excursion—for a commission to visit Cuba, Mexico and Brazil to definitely ascertain the facts about the claims of Freire and Carmona to the discovery of a means for preventing or modifying yellow fever, lest it might be found these claims are groundless, without considering the alternative possibility of saving thousands of lives and millions of money. The French Government did not hesitate to send a commission to Spain, which exposed the worthlessness of Ferran's methods; the German Government dispatched Koch to India; and the British Government has just appointed a commission of the highest scientific character to ascertain the truth as to Pasteur's reputed success in averting rabies.

Many years ago, an old style commodore found fault with me for invaliding so many officers and men from the Isthmus of Panama after attacks of Chagres fever, complaining that many of them got well by the time they reached New York, as though that were not the very reason for sending them out of a climate where they would have died or been permanently injured. Just as illiberal is the spirit which withholds the wherewithal for the efficient operations of a Health Board whose aim is to banish preventable disease. The fact that no disease occurs is the splendid argument for the wisdom of the provision. Hold back the necessary means, and I have but hastily shown you that the intended virtuous economy is only vicious parsimony; then, should disaster come, whether to you or to your neighbor, let the evil be upon your own heads.

#### IV. Sewering and Draining Cities.

By GEORGE E. WARING, JR., *Of Newport, R. I.*

I have been announced to read a short paper on the sewerage and draining of cities and towns. This is rather a large subject for a short paper. All that it will be possible to do, will be to state very briefly some of the leading fundamental principles on which the sewerage and draining of towns should be based.

There are two aims to be accomplished: One is to increase the convenience and comfort of living; and the other is to lessen the danger to health and life.

For the convenience and comfort of domestic and municipal life, it is important that water which falls from the sky, and water which rises into the ground, from springs or otherwise, should be removed in such a way that cellars shall never be flooded, and that accumulations of water on roofs, yards and streets shall be carried away without doing harm, and without rendering walking or driving inconvenient or uncomfortable. The best result will generally be attained if these objects are considered by themselves.

So far as the water of the subsoil is concerned, if it has a tendency to rise to the height of cellar floors, or even to the surface of the ground, some means should be provided for carrying it away by a sufficiently deep system of underdraining. If this were the only thing to be done, it might best be accomplished by exactly the same method that is used for draining farm lands—that is to say, by giving it a free means of escape at a level lower than that of cellar floors. In this way, we can get rid entirely, and without trouble or great cost, of what when neglected constitutes a widespread nuisance.

The water which falls on the roofs of houses, and is led to the ground by leader pipes, should be delivered to some point of proper outlet without running into the foundations of houses, without making an inconvenient wash over yards or paths, and without flooding sidewalks. Very generally, the best way to accomplish this is to lead it through pipes as far as the outer edge of the sidewalk, delivering it into the street gutter or into an underground conduit, as may seem best.

When delivered into the street gutter it joins the street wash, which the gutter is primarily intended to carry, and the two volumes combined constitute the surface flow which it is the object of storm-water drainage to remove.

It is a question to be regulated by economical considerations, whether or not to make the drainage provision such as to take care of all the water of exceptionally violent storms, or only to provide for such storms as, from their frequency, would constitute a regularly re-

curring annoyance. It often costs more than it is worth to make our works so large as to take all of the water coming with great storms which fall only at long intervals, and which continue for a very short time. All that it is generally wise to do with reference to such storms is to make such provision as will prevent their doing actual damage to public or private property.

Having determined the volume of rainfall for which it will pay to provide—assuming still that the removal of storm water is the only thing to be considered—it will be prudent and proper to depend on well-formed and well-made and well-graded street gutters to carry the whole flow, as far as they can carry it without too frequently flooding the sidewalk or the street. Whatever the conformation of the surface, whether steep, flat, or broken, a careful study should be made of the whole situation, and grades and gutters should be so established as to make the points of excessive accumulations as few as possible. These being established, lines of underground sewers, or drains, which for storm-water work only may be laid very near to the surface, should be run by the shortest and most economical course to the nearest safe points of outfall.

Considered and treated in this way, the underground work necessary for relief from floods will ordinarily not be serious, especially as there is nothing in the character of such floods, if streets are decently cared for, which will make it objectionable to deliver them into runways or water courses near by.

In this connection, it is well to refer to an old and cherished statement, which has constituted a standard and uncontroverted argument among engineers for many years, but which in my judgment is not well founded.

The argument prevades pretty nearly the whole literature of the subject. Baldwin Latham states it as follows :

“A very slight amount of investigation will show that the sewage of the northern towns, in which midden-steads are generally adopted, is, as a rule, quite as impure and nearly as great in volume as in districts in which water-closets are universally used ; while at the same time the sewage contains nearly as large an amount of putrescent organic matter as in a water-closet town.” He then gives the often used list of certain towns in England, in some of which there are water-closets and in others of which there are not.

There has been a sort of tacit acceptance of the idea that this means that street wash is as foul as house drainage. All that it really means is that there is so much filth due to other sources in domestic and municipal economies that the addition or subtraction of mere water-closet matter is of small account. It by no means proves, or tends to prove, that the filth to be dealt with in artificial drainage is largely due to street wash. It is really due much more largely to kitchen and laundry waste and chamber slops than to anything else. There is no rea-

son why any of these should be delivered into the street drainage. Being withheld, the water flowing over the surface, or even tolerably well kept streets, is not to be considered as sewage at all, and there are few cases where it may not safely be delivered into water courses near the town.

The removal of subsoil water and surface water being considered as a proposition by itself, it is generally only a question of economy whether or not to deliver it in connection with the foul wastes of the community.

Considering also, by itself, the question of dangers to health and life, while we may disregard surface water we cannot disregard subsoil water. Where this exists within the depth to which cellars are dug, it is very apt to constitute a somewhat serious sanitary objection. This, however, is not what we have chiefly in view in discussing problems of municipal sanitary drainage. Reference is made chiefly to the removal of the more or less obvious, but always dangerous, nuisances caused by our methods for treating waste organic matters.

All such matters which are of a putrescible character, whatever their origin, should be completely and entirely removed, not only from the house but from the town, before they have had time for their decomposition to begin. In their fresh condition they are rarely a source of danger, and, with the single exception of fæcal matter, they are rarely a source of foul odors. If we can deliver them into a sufficient volume of water to smother the excrement that they contain, and can get them out of the town promptly and efficiently, the whole problem is solved so far as our interior work is concerned.

This may seem a very simple statement to make, and it may seem to suggest a very simple remedy for our trouble. It becomes less simple when we consider what it involves.

It involves such a reconstruction of every defective water closet, or trap, or waste-pipe, or house drain, as shall ensure absolute cleanliness in all of these items. That is to say, it involves a reconstruction of the drainage work of ninety-five out of every hundred houses in the town.

It involves such a reconstruction of local drains as will tighten every joint, and keep their water inside of them, to perform the cleansing duty for which it is intended, instead of leaking away into the ground and leaving the solid parts of the sewage to lie in the drains and rot for want of a current to carry them forward.

It involves the abolition of every cess-pool and privy vault in the town.

It involves also the abolition or reconstruction of every sewer of which the water-way is so large, or so rough, or so leaky that it will not carry its whole flow all the way to the outlet. It involves also some means for preventing the accumulation of coarser matters near the upper ends of the lines, which is inevitable even in the smallest

and best made sewers along those portions where the natural flow is not enough to wash away the solid substances as fast as delivered.

In short, it involves a system of house and town sewerage of which there are very few examples anywhere in the world.

Having secured such a system of house drainage and local street sewerage as will accomplish this end completely, there arises the question, which is to be decided largely by considerations of cost, save where this is overborne by the considerations of disposal, whether to carry away the surface water from points of local accumulation and the foul drainage from houses, etc., by one set of conduits, or by two. If there is a safe point of outlet, not too far removed, where in cold weather and in warm, in wet weather and in dry, the whole volume can be safely delivered, as it could be if it were run into the Mississippi river, for example, it may be cheaper, and if it is cheaper it will better to deliver the two together.

Where such a point of outlet does not exist, or where it can be reached only at great cost, owing to the necessity for building large brick storm water sewers for a great distance; or where sewage is to be treated chemically or agriculturally for its purification; or where it has to be pumped, there it will generally be found best to get rid of the storm water by the shortest route and in the cheapest way, and to go to the expense of laying conduits for pumping or for purification only with reference to the smaller and more regular flow coming from house drains only.

Even where there is no objection to increasing the sizes of all the sewers throughout all the streets, and delivering storm water into them directly, the increased size required for storm-water sewers indicates the policy of using such sewers only so far as to the points of accumulation of surface flow already referred to.

We all know, of course, that the method of sewerage that is practically universal in Christendom is to take all of the water of light rains, and as much as we can compass of the water of heavy rains directly into the foul-water sewers. The statement is often made that all necessary considerations of economy will be satisfied, so far as the size of the outlet or the cost of purification or pumping is concerned, by establishing storm-water overflows by which when it rains more than a very little the surplus flow will be delivered directly at some near point of outlet, only the minor flow passing on through the smaller main.

There is a fallacy here to which attention may well be called. The volume of sewage discharged from houses varies with the time of day and considerably with the day of the week. It is ordinarily very much larger for a little while during the forenoon of wash-day than at any other time during the week. If the storm overflow system is used, of course the overflow point must be placed high enough not to allow this wash-day flow to escape. It must surely be high enough to carry all such volumes safely forward.

As outlet sewers are generally constructed with a view to a large future increase of population, the overflow must be placed high enough to provide for such population, often many times the number that will have to be dealt with for some years to come. Now, that point being fixed and the volume of sewage that will always be sent through the larger and smaller outlet sewer being regulated by the height of that point, we find, in practice, that all of the water of moderate rains, continuing sometimes for days together, has to be carried to the distant outlet for pumping or for purification; and a simple calculation will show that outlet provision ample for the mere house drainage must, because of the need for carrying and treating all of the storm water that can run below the overflow point, be enormously increased, at a corresponding increase of cost for pumping and purification, where these are needed.

I have purposely avoided all references to details of sewerage work, and have attempted nothing more than to lay before you a few cardinal points which it may seem worth while to consider and to discuss. More it would hardly be possible to do on such an occasion as this.

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#### V. The Financial Aspect of Sanitation.

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By ALFRED LUDLOW CARROLL, M. D.,

Of New Brighton, N. Y., late Secretary and Superintendent Vital Statistics, State Board of Health of New York.

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Political economists tell us that all advances in civilization are founded on "enlightened self interest" rather than on philanthropic altruism, and the most superficial observation of human nature corroborates this axiom as regards the average taxpayer and his legislative representative in this Republic. The "practical" business man is generous enough in giving his money voluntarily for charitable purposes, but he strenuously protests against any increase, however small, of the demands on him as a member of the body corporate, unless he can see a prospect of a profitable return from the investment. This is peculiarly the case in the matter of sanitary improvements, concerning which the arguments that have usually reached the public ear have been directed more to the emotional than to the commercial instinct. The sturdy citizen whose robust constitution saves him personally from endemic disease, will resist any expenditure for general hygienic protection of the community, although he will willingly contribute much more than his share of such expenditure for hospitals and asylums, to care for his neighbors who succumb to preventable maladies; and the only way of inducing him to subscribe his "ounce of prevention" is to convince him that the actual money profit

of saving life and health is as great as that from the most successful speculative venture in the stock exchange, or the most absolute monopoly in a railway franchise, and much more certain than either.

No argument is needed to support the self-evident proposition that that the worldly prosperity of a Commonwealth is the aggregate of the average prosperity of its component citizens. As Jarvis, in his excellent essay on the Political Economy of Health [Fifth Rep. S. B. H., Mass.], has happily phrased it, "Every increase of individual estate, every dollar earned, and every new value created is so much addition to the Commonwealth, and every detraction from the wealth of individuals, every dollar that is expended without return, wasted or squandered, every extinguishment of any value is so much taken from the public capital." It is obvious that if a man earn more than the cost of his subsistence, the surplus is so much added to the general fund, while, on the other hand, if he cost more than he earns, the deficit is a burden on the community at large; or, to put the statement in conventional politico-economical form, the accumulating wealth [of the community, as of the individual], is the excess of production over consumption. It is further clear that the premature death of a productive individual, like the destruction of any other source of revenue, represents the loss of a certain amount of income, and that his withdrawal from productive industry through sickness, signifies the suspension of such income plus the additional cost of attendance during his illness. With a knowledge of some of the facts collected by vital statistics, and a good table of "present values" of annuities, these losses can be calculated with as much accuracy as any of the actuarial data on which insurance premiums are founded, a simple formula being that "the present value of the person's future earnings, minus the necessary outgo in realizing those earnings, is the present value of that person's services." [Farr.] That is to say, if a person whose earnings exceed the cost of his subsistence by \$500 a year, die twenty years earlier than the natural termination of a healthy working lifetime, the loss to the community is the present value of an annuity of \$500 for twenty years, *i. e.*, at six per cent., \$5,735. The money-worth of the individual, therefore, varies with his earning capacity and his living expenses; and with the postulate that the average productive period of life is between the ages of twenty and seventy, we have a basis for tabulating the profits of each class of incomes. According to Farr's elaborate computations, while the value of a Norfolk agricultural laborer at the age of twenty-five is £246, the value of a professional man earning £300 a year is about £3,000, or, as he otherwise puts it, "the loss or injury of a carriage full of curates might not exceed £30,000, while the loss on the life of two bishops might raise claims for a larger sum. "In the death of a minor, our loss is not only the present value of a "deferred annuity," representing the probable earnings of his manhood, but also the amount spent



in his maintenance during unproductive childhood. It is, of course, manifest that the earner who has a probability of forty years of future industry is worth more than him whose "expectation" is but twenty years. Knowing the relative numbers at different ages and in different occupations, it is an easy, though tedious, task to determine the average of these various factors, and to reach the mean value of the individual. From the immense mass of statistics at Farr's disposal, he demonstrated that "the minimum value of the population of the United Kingdom, men, women and children, is £159 a head; that is the value inherent in them as a productive, money-earning race." In North America, with its larger wages and higher rate of interest, this estimate should be increased in the proportion of rather more than 30 per cent., and without adducing the differential calculations, which any one may make for himself, from a comparison of Farr's statistics with those available here, it may be broadly stated that the minimum value of a human life in the United States is at least \$1,000.

To the unthinking mind, a reduction of the annual death rate per 1,000 of population from 22 to 21 may seem almost insignificant; but when viewed from the above pecuniary standpoint, it will be seen to mean, even in a town of 10,000 inhabitants, an annual saving of 10 lives, equivalent to a gain of \$10,000, which would yield 10 per cent. profit on a capital investment of \$100,000; and if we extend the same estimate to a population of 50,000,000, we get a revenue which at the same rate would justify an outlay of \$500,000,000; in other words, we, if the cost of the needed sanitary improvements to produce this small decrement in the death rate required a contribution of \$10 from every inhabitant, the return would be greater than could be realized from almost any other investment. But neither is the cost so large nor the profit so limited. With far less expense the mortality has been vastly more reduced and the duration of life increased by millions of working years in a generation. Thus, in France the average length of life has been augmented ten years within the last century, an aggregate of about 400,000,000 years for the total population; in London the death rate per 1,000 has been reduced from 50, in the eighteenth century, to less than 22, a profit of over 100,000 lives a year; and there have been numerous instances within the past half century of diminutions of from twenty to thirty per cent. in death rates. As a farther item to be remembered in balancing our public ledger, it must be borne in mind that for each death 26 persons may be assumed to be seriously ill, aggregating two years of sickness; and that on an average the cost of supporting and treating each patient is half as much as he would earn if well. Now, the ideal natural death rate of a perfectly organized community, where old age should be the only cause of mortality, would not exceed 10 per 1,000; but without aiming at this Utopian model, sanitarians are agreed that a ratio of 17 for even large cities, and 15 for the population at large,

ought to be practically attainable; and whosoever will examine the official records of the majority of urban or rural corporations may count the enormous gain to be made by such a reduction.

Among the preventable diseases which should be most easily controlled, are the commonly known infectious zymotic maladies, and these, in the mortuary returns of different places, constitute from 13 to 24 per cent. of the total mortality. As regards typhoid fever and diarrhoeal disorders, experience has over and over again shown that proper methods of sewage disposal and pure water-supply have sufficed nearly to abolish them. Indeed, the whole class of "filth diseases" could be banished from our nosology by ordinary attention to sanitary cleanliness. Malarial fevers, which in many districts cripple productive industry in greater proportion to their mortality than any other ailments, may be virtually exterminated by efficient soil-drainage, and not alone these, but consumption, which in temperate climates plays the largest part in the death roll (causing in the State of New York 14 per cent. of the whole mortality), has been shown to be intimately associated with dampness of soil, and has in several recorded examples been diminished 50 per cent. by drainage works. A similar reduction in New York, including the comparatively small mortality from malaria, would be tantamount to an annual revenue of six and a half million dollars, to say nothing of the enhancement of the value of land, if only for agricultural purposes, an enhancement which has often reached tenfold of the original valuation. Aside from the disorders directly dependent upon infection or local insanitary conditions, whether municipal, domiciliary, or industrial, public hygiene ultimately much widens its preventive range by increasing bodily resistance to, and diminishing the fatality of other classes of diseases, even of constitutional or developmental types, and by raising the general standard of health increases productive capacity.

To take more definite figures, Simon proclaimed some years ago that about 120,000 preventable deaths occurred annually in England and Wales, and Chadwick supported the same result; in France, by a similar computation, the number may be placed at about 250,000; in Spain, about 190,000; and in the United States, Billings reckoned from the census of 1870 that the annual deaths from causes known to be preventable were "certainly over 100,000," an estimate which may now probably be raised to over 160,000, and he adds, "if we were to consider theoretical possibilities rather than actual probabilities, these figures might be doubled." If to such lethal losses we add twice as many years coincidentally withdrawn from production by serious illness, the aggregate appals the imagination, and dwarfs the most destructive ravages of war to insignificance. Setting aside all sentimental considerations, and regarding it only in its financial aspect, it means that in this country alone an annual loss of \$208,000,000, and

an annual cost of more than \$24,000,000, at the very lowest estimate, are taken from the public fund by preventable death and illness, and that the saving, or, more properly speaking, the gain of this sum would yield cent. per cent. profit on a capital investment of \$232,000,000. Can the most visionary dreams of speculative ventures offer so alluring a revenue?

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## VI. On the Sanitary Significance of Sporadic Typhoid Fever.

By PEMBERTON DUDLEY, M. D.,

Of Philadelphia, Member State Board of Health of Pennsylvania.

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It is not the intention, in this paper, to offer any facts or inferences that are not already well known to all enlightened physicians and to many other intelligent people. The whole subject of typhoid fever—its origin, its propagation, its progress and its tendency, are familiar enough to those who make special study of such subjects; but there are few infectious zymotic diseases, upon which the general public is more in need of enlightenment than this prevalent and dangerous malady, and especially is this true as regards its cause and origin. The fear of infection inspired by small-pox and scarlet fever is less generally and less acutely felt in the presence or imminence of this less actively contagious disease, and the means employed to avoid the former are not thought so necessary as safeguards against the latter.

But the gravest misconception of typhoid fever by the general public, consists in an entire misapprehension as to the specific nature of the agency that produces it. Indeed, if we judge from conversations frequently heard in reference to it, we might almost be led to infer that the disease comes on spontaneously, and without assignable cause. Physicians know, of course, that such things cannot be. Driven to the point by close questioning, they all admit the specific character of its cause, yet how frequently do they seem to manifest very little interest or desire to learn just how any particular case had its beginning. A patient attacked with variola, or measles, or scarlatina, elicits at once the professional inquiry, "Where did he get it?" "How did this unfortunate occurrence happen?" "Where and when did the exposure occur?" Are these questions always, or even generally asked, respecting a case of typhoid fever; and if not, then why not? I am becoming pretty well convinced, from the observations of the past few years, that this latter disease can be traced to a definite cause in nearly all cases, at least in our large cities.

It can do no good to inquire particularly how the present crude and erroneous notions respecting the probable and possible and almost multitudinous agencies, ascribed as causes of typhoid fever, came to

exist in the public mind. It is enough to know that these notions must have sprung out of the narrower professional knowledge of the years gone by; but in the light of present information, professional failure to disseminate more correct views can hardly be excusable.

The notions of the ancients respecting the causes of epidemics are sometimes held up as evidence of the dense ignorance of those early times, and of the exceeding incapacity of even the world's brightest minds to reason back from results to causes. We smile at their fears lest some one of the deities, of which they possessed so abundant a supply, should vent his anger by the out-pouring of some dire plague upon the hapless people. But when we pride ourselves upon our freedom from these superstitions, let us for just a moment remember that Milton's allusion to the comet that, "from his horrid hair, shakes pestilence and war," originated on *this* side of the Dark Ages, and that Webster's book on comets as the cause of epidemics is less than a hundred years old. Perhaps it may also promote in us the virtue of humility, if we recall the fact that twenty-nine years ago an epidemic of typhoid fever in the National Hotel at Washington, which threatened the lives of President Buchanan and his Cabinet Ministers, was ascribed to the infernal machinations of the opposing Whigs. Right in our own day it is not at all unusual to hear cases of typhoid fever attributed to overwork, either physical or mental, to loss of sleep, to mental anxiety, to general debility, etc., etc., and we—we physicians, I mean—fail to embrace the splendid opportunity thus presented, to read a brief and pertinent lecture on cleanliness. We allow these popular delusions to remain undisturbed, and overlook the fact that in the light of present science they are scarcely less irrational than those which attributed the invasion of an epidemic of typhoid fever to a comet or an earthquake, to the anger of the gods, or the disappointment of the Old Line Whigs.

It ought not to be difficult to convince people of ordinary intelligence, that a disease whose essential features are of so constant and unvarying a character as are those of typhoid fever, cannot be reasonably supposed to originate from inconstant and diverse causes, but that its cause must be essentially the same in all cases, or as the doctors express it, it must have a "specific" origin. Its unvarying course and succession of changes, its well defined stages, its equally definite duration, its constant anatomical lesions, in intestine and spleen and skin and mesentery—such an invariable succession of phenomena, such a uniform series of manifestations,—must have *one* cause, and *not* a dozen. Overwork, mental anxiety, night vigils, may open the gates of the body to the invader, may increase its susceptibility, but can cause the disease, never! These facts, so familiar to all physicians, ought to be as firmly impressed upon the public mind.

That the greater proportion of cases of typhoid fever occurring in our large cities are due to an infection derived from preëxisting cases,

needs no argument to commend it, and certainly can be scarcely doubted. The same thing is undoubtedly true of numerous cases in which the cause remains undiscovered. But I have never been quite willing to reject finally and totally the view of the late Dr. Murchison, that under certain favoring conditions the disease may originate *de novo*, perhaps from some decomposition-product generated or modified in human excrement, or in decomposing organisms. Neither am I discouraged in the least by the assertion that such a view implies the possibility that small-pox, syphilis, etc., may also originate anew. If we deny this possibility we must logically admit the proposition that these contagions first arose from some natural conditions and processes such as cannot occur again in the world's lifetime, or else we must ascribe to them a miraculous origin either during the history of our race, or else amid the creative glories and purities of the Garden of Eden. The instances in which typhoid fever invades the isolated homes of rural districts, in most of which, no possible communication can be traced with any other case either near or remote, are too numerous to be explained on the theory of an invariable contagion. Discussion of this question, however, is scarcely in place in this paper, or indeed in this convention, unless it can first be shown that upon its decision rest the sanitary questions pertaining to typhoid fever. Fortunately it happens that I am not placed under any such obligations. All writers agree that the emanations from decomposing night-soil and disintegrating organic tissues, do in some way or other increase the prevalence and virulence of the disease under consideration. Even if they never, under natural conditions, constitute the essential cause of typhoid fever, they undeniably increase, and very greatly increase, the susceptibility of those exposed to their influence. Hence our duty as sanitarians seems to be scarcely affected by these etiological questions upon which our pathologists are divided.

The most important lesson to be learned by the public in reference to typhoid fever is that it is a "filth disease"—not sometimes, not generally, but *always*. And perhaps the next in importance is, that while the production of the disease probably requires that the morbid agent shall be brought into contact with the alimentary mucous membrane, as in food or drink, it is possible for the salivary fluids in the mouth and throat to absorb the poison from the atmosphere, and thus become the medium of its transmission to the stomach. There is also a third lesson, of no less value to us, viz: That various articles of food, and especially milk, water and other fluid foods, possess the same property of absorbing the fever poison from the atmosphere and thus becoming the vehicles of its introduction into the system.

My own observations are fully in keeping with the view that the absorption of the poisonous emanations by the salivary secretions, and by food stored in pantries and kitchens, but especially the latter, furnishes the explanation of nearly all the so-called "sporadic" cases of

true typhoid fever occurring in this city. In a large proportion of the cases it will be discovered on examination, that odorous emanations from kitchen drains, but more frequently from privy vaults, are easily perceptible to the senses in the rooms where food is stored and where it is being prepared for the table. In most of the observations I have made on this subject, it has appeared to be the privy vault, rather than the drain, that has been responsible for the evil. Let me describe two instances in which, as I think, the cess-pool was at fault. But remember, I do not offer these cases to *prove* my point, but only to *illustrate* it.

In September, 1885, I attended a boy aged seventeen, suffering with a mild yet pronounced typhoid fever. The house fronted on a narrow lane which terminated in a blind extremity, and which, like all other lanes of that peculiar character in this city, was closely packed on both sides with brick boxes, called "houses" by way of courtesy. Back of the house a three-foot alley ran parallel with the lane, but immediately after passing my patient's back yard, it turned away at right angles toward another and parallel street. Little houses backed against this alley-way on both sides of its long arm and against one side of its shorter arm, but each house had in its rear a little narrow space—called a "yard"—which was large enough to hold a privy vault, and not much more. The arrangement was such that within ten or twelve feet of my patient's kitchen window there were four cesspools, and within thirty feet there were ten of them. The whole vast, infernal machine was completely shut in from lateral air-currents, and the noisome odors were distinctly perceived in every room of the house. I learned of no fact leading to the inference that the patient's disease had been contracted elsewhere, and indeed it seemed almost unnecessary to search for such evidence. Strange to say, there was not any more sickness in the immediate vicinity than is generally found in such localities. I am perfectly willing to attribute to these cesspools, *not* the transmission, but the *origin* of my patient's sickness.

The other case that I shall mention is destined to become historical. In August, 1885, I was ordered by Dr. Lee, the Secretary of our State Board of Health, to investigate the sanitary condition and management of a certain house, located on a corner of one of our widest avenues in the north-eastern quarter of the city. Dr. Lee's letter contained suggestions as to the scope, and hints as to some of the directions which my investigation should take. I made repeated visits to the locality, and spent many hours in tracing out every possible clue to the information I was seeking, and was forced to limit my conclusions to the condition of the premises alone.

The house extends in its length the entire depth of the lot, but does not occupy its entire width. Originally the yard, running alongside the house, had a length of some forty feet, but a one story kitchen

was built, which jutted out from the side of the house, cutting this yard completely in two. The front portion of the yard has a front of twelve and a depth of seventeen feet. The back portion has been still further encroached upon by a frame dining-room extending its whole length, so that it is now reduced to the dimensions of fifteen feet by three. At the rear end of this narrow space is a cess-pit, which encroaches three feet upon the length of the space, reducing it finally to thirty-six square feet—just one fourth of the minimum size now demanded by law. The privy is *ornamented by a sham ventilator, which rests upon, but does not penetrate, its roof*. The pit is some three or four feet in depth. Backed against this privy is a similar edifice, the property of the next door neighbor. This also opens upon a three-foot wide court running around the corner of the aforesaid neighbor's dwelling. The little 3x12 back yard we are describing is bounded on one end by the one-story kitchen, and on the other end and the two sides by two-story buildings. The house has two windows in each of its two stories, and the kitchen has a door—all opening into this cesspool yard. The two lower windows of course belong to the dining-room. The exhalations from the privy are exceedingly offensive, as might be supposed. They are shut off from lateral air-currents, and find their way in large quantity into the kitchen, dining-room and chambers. Indeed, there is little other chance of escape for them. The whole arrangement looks as though it might have been planned as a hot-bed of zymotic disease. Let us see with what success.

In August, 1883, a young blacksmith came to board in the house. He was soon siezed with typhoid fever. His physician immediately sent him to the Episcopal hospital, whence he returned recovered. Nearly a year later, in May or June, 1884, another new boarder, a huckster, was attacked with the same malady. He was at once transferred to the hospital, whence he returned safe and sound in August. (During this summer the cess-pool was "cleaned," *i. e.*, cleaned after the manner and methods in such cases usually made and provided. In other words, it was nearly emptied of its contents.) Soon after the recovery of the second case, a third new boarder, a street car conductor, became ill with typhoid fever, went to the hospital, and recovered. Here were three cases in about sixteen months, and it would seem that their prompt removal to the hospital, and the intervals that elapsed between the cases, ought to preclude the probability that one transmitted the disease to the others, though it is undeniable that the typhoid germ may maintain its virulence for a long period.

The fourth victim was not a boarder, but a visitor. After spending at the house the Christmas holidays of 1884, he returned to his distant country home on the mountain side, where he soon sickened with typhoid fever. His dejecta, which were unusually abundant, found their way into a little stream which flowed past the house, and thence

into a supply reservoir below. For the subsequent history, ask poor plague-stricken Plymouth. When Philadelphia sent to the hapless inhabitants of that pest-ridden town money and medicines, and food and nurses and physicians, it was not charity; it was but a small instalment on an immense debt. Had there been no defective cess-pool in Philadelphia, there would have been no typhoid fever epidemic in Plymouth.

In her typhoid fever mortality, this city has a bad record. She also has cess-pools; the ground on which she stands is fairly honey-combed with them. They poison the soil beneath our homes; they pollute the air we breathe; they contaminate the water we drink and the food we eat; they hurl disease and death in their most loathsome forms into our circle of loved ones. The privy-vault, even at its very best, in any city or town, and even when very near a rural dwelling, is a dangerous, insufferable, abominable nuisance. There are degraded savage tribes who keep in their huts for long months the putrefying bodies of their dead; but how does it accord with our ideas of the intelligence, the taste, the refinement of this age, that the great mass of our people keep, within a few feet of their hearthstones, whole tons and tons of festering, reeking rotteness? Whatever we may do with the sewers, let us—in the name of decency and cleanliness and health and life—let us banish the cess-pool.

The sanitary significance of typhoid fever is not overwork; it is filth. The disease does not essentially mean the result of the wear and tear, the hurry and worry of life; it means filth—filth every time—noisome, reeking, disgusting filth. And one of the practical questions of this age is whether we physicians shall have the boldness—and true physicians are always bold—to stand up in the presence of our stricken patients and tell them so, in order that safety may be secured to others.

Our city board of health has adopted a rule requiring that all cases of typhoid fever shall be reported as are other infectious diseases. These reports should be followed up in every case by a thorough and complete expert examination of the house, or, if necessary, the school room, store or workshop where the victim may have contracted the disease. But to do this, the Board must have money.



VII. The Progress of Sanitary Science in the State of Mississippi  
During the Past Ten Years.

By W. F. HYER, M. D., of *Holly Springs, Miss.*,

Member Mississippi State Board of Health.

A paper concerning the progress of sanitary science in the State of Mississippi may appear irrelevant on the present occasion; but this country, although so vast in extent, is so closely knit together by the great arteries of trade and travel which link one border with another that no epidemic of contagious or infectious disease derived from a foreign country can gain a foothold in our borders without endangering the health and welfare of every city and every State in our common country.

It is not beyond the memory of man when the yellow fever ravaged the city of Philadelphia, and although a better system of quarantine and sanitary regulations renders your city less liable to infection than in former days, yet under favorable circumstances you have no guarantee that you may not again become victims to the yellow plague.

The main defense of your city against cholera and yellow fever lies in the strict enforcement of your maritime quarantine laws, for should the path of an epidemic approach you from the interior it would almost be a matter of impossibility, considering the many avenues of travel and commerce connecting you with the back country and other seaports to provide a successful and efficient quarantine without establishing an absolute policy of non-intercourse with neighboring cities and localities, unless your State Board of Health should be amply endowed with both funds and authority to enable them to take most efficient measures to intelligently guard every avenue of approach to your borders. A policy of non-intercourse with neighboring States would not be more disastrous to your commercial interests than would the presence of an epidemic of infectious or contagious disease to the lives of your communities; and it therefore behooves your State Board of Health, in conjunction with your State Medical Association, to make every legitimate effort to bend the minds of your Legislature to the importance of the interests at stake, and convince them of the necessity of arming your State Board with sufficient authority and funds to enable them to meet any emergency. It is not right that you should be held responsible, unless your hands be strengthened. Yet should disaster ensue to your people from epidemic disease, the responsibility would be laid on your shoulders. None better than myself know the difficulties that lie in the way of obtaining legislative action in the line of sanitation, and none realize better the ease with which such action may be obtained when proper steps are taken toward that end. The great mistake that is usually made in that direction by those having sanitary legislation at heart is in applying to members

of the Legislature *after* they have been elected and met in an organized body. For six years the Medical Association of the State of Mississippi annually approached the Legislature with their bills and memorials *after* their organization, and for six years their efforts were *nil*; for there is no person in the broad earth who is more filled with self-importance than he who has been elected to represent the dear people in the councils of state.

Our association finally hit upon the happy idea of approaching the embryo statesman before he is fully fledged; while he feels that he is only a small potato and few in a hill; while he is endeavoring to win friends favorable to his advancement; and experience teaches that if you make approaches at that time he readily falls a victim to your wiles. Enlist the doctors of your State in an effort for sanitary reform; induce them to demand pledges from candidates for legislative honors in advance of their election, and the pledges will be given and kept, and you will be placed on the high road to success and in a position to do honor to them who granted you authority and power. After noting then what power you have to protect yourselves, another subject of interesting inquiry arises when we consider the fact that the Asiatic cholera has again made its appearance in Spain, and that the yellow fever is again epidemic in South American ports, whether in the problem of how to prevent a spread of these epidemic diseases into the interior of the United States, should they gain a foothold in our ports of entry, any factors are now present which were absent in 1878, and previous years. At that time when an epidemic disease made its appearance in New Orleans, all means of resistance had been utilized and the disease was free to spread itself along lines of travel, without any effort being made to stay it. The inhabitants of centers of population in the interior bowed their heads to the impending calamity with the indifference which characterizes the conduct of the eastern fatalist. We desire in this paper to call attention to the spirit of enlightenment which has come over the people of the South in this as in other matters, not only in Mississippi, but in all the other States adjacent to and connected with the Gulf of Mexico by paths of commerce and trade; and we can perhaps give a fair illustration of the present condition of affairs in all this region by describing the gradual but sure progress of the State of Mississippi in the line of sanitary education.

A history of the advance of sanitary science in the State of Mississippi during the last ten years is, to a great extent, that of the adjacent States of Tennessee and Louisiana during the same period. Sanitation is a result of civilization, of first importance in centres of dense population yet tardily considered and with difficulty sustained among sparsely settled rural communities. The State of Mississippi having no minerals within her borders, no manufactures of importance, with no large centers of population, is essentially an agricultural State, and therefore, to a certain extent, free from unsanitary conditions, which in

other localities give impetus and importance to the strict consideration of sanitary rules and conditions. Ten years ago the medical profession and the authorities of Mississippi were as profoundly indifferent to the operation of sanitary laws as were the people of Pompeii and Herculaneum to the eruptions of Vesuvius at any period preceding the great calamity which overwhelmed them.

At that time we relied upon the inefficient quarantine laws of Louisiana as they were operated in New Orleans, and of the State of Tennessee and city of Memphis, to protect us from the visitation of epidemics from foreign sources; for while the law of the State provided for the appointment of Boards of Health by municipal and county authorities, the appointments were seldom made; and when they were, the officials appointed were without authority, pay, or influence.

In 1876 a committee of the Mississippi State Medical Association formulated a bill, and by memorial presented it to the State Legislature for enactment into law, which provided for the establishment of a State Board of Health, whose members should be selected by the State Medical Association and appointed by the Governor, and whose term of office should be six years, one-third retiring every two years. The bill further provided that the Governor should appoint upon the nomination of the State Board of Health a competent medical man as health officer of each county, whose salary should be fixed by the board of supervisors of the county, said salary not to exceed that of the county superintendent of public education. This bill, after being rendered almost inert by amendments, was passed by the Legislature and signed by the Governor. It, as passed, provided for no pay for for the services of the Board of Health or their necessary expenses. Neither was any fund placed at their disposal for quarantine or sanitary purposes, nor was any authority granted them except to write papers on sanitary subjects, to be printed in their annual report to the Legislature at the expense of the State. Under these embarrassing circumstances the Board of Health annually spread their storm signals throughout the State, and the State Medical Association kept things hot in the legislative halls through their memorials and committees. No progress however seemed to be made in instructing the average legislative mind as to our sanitary necessities until the fatal and widespread epidemic of yellow fever of 1878 broke upon the people with all the suddenness and power of a western cyclone, destroying thousands of lives, bankrupting our most prosperous merchants, and carrying ruin to almost every industry, and terror into almost every household. Then it was that the inquiry was instituted throughout the State as to why the warnings and promptings of the organized medical profession had been spurned and disregarded, and it awakened the Solons of the State to the nature of their responsibilities, which resulted in the enactment of a statute giving the State Board of Health, ample power and ample funds to take such measures as they might deem

necessary to prevent further calamities from that direction. Not only was a valuable lesson taught the law-makers, but the Board of Health was convinced that the so-called quarantine system and health laws of Tennessee and Louisiana were a fraud and a delusion.

This law, however, was not enacted until 1880, the Legislature only meeting biennially. And during the year 1879, when the epidemic raged so virulently in Memphis and threatened a visitation to New Orleans, the Mississippi State Board, through pecuniary aid rendered it by the National Board of Health, was enabled to institute such measures as enabled us to keep the infection from our borders; and to the aid and assistance given us at that time is to be in a great measure attributed the unswerving loyalty and friendship rendered the National Board in its hour of adversity by the State Board of Health and Medical Association of the State of Mississippi.

After the epidemic of 1879, a spirit of antagonism displayed itself on the part of the Louisiana State Board of Health as against the National Board, and a contest ensued between them, in which the boards of health, both State and municipal, in the Mississippi Valley, as a general thing arrayed themselves with the National Board on account of the fact that a belief was prevalent that the State Board of Louisiana was disposed to conduct their quarantine with an eye more to their trade with tropical ports, than to the sanitary interests of the people of the Mississippi Valley. This belief was intensified in the struggle by the National Board to make Ship Island a quarantine station rather than the Mississippi river station below New Orleans, for to this proposition the Louisiana Board made most strenuous opposition. The result of the contest was that the National Board of Health was shorn of its powers by the cutting off by Congress of its appropriation, leaving it in the condition of Samson after Delilah had made a raid upon his locks.

When the Boards of Health of the valley realized that their former friend and stay was powerless for further good, a feeling of uneasiness prevailed which resulted in the organization of the Sanitary Council of the Mississippi Valley, which was composed of representatives of State and municipal boards of health, and representatives of railroad corporations and any other organized body interested in the prevention of the spread of epidemic disease, who took sufficient interest in the matter to send representatives. The conception and organization of this powerful body, of which the Mississippi State Board was a component, was to a great extent due to the earnest and untiring efforts of Dr. Jno. H. Rauch, the accomplished secretary of the Illinois State Board of Health. This body, sustained by an earnest public sentiment, had sufficient financial backing to enable it to fill the place made vacant by the retirement from active life of the paralyzed National Board, and during the period of its active life, the people rested secure in a consciousness of its power and ability to prevent the in-

troduction and spread of epidemic disease into the interior States. The feeling of distrust of the Louisiana State Board and want of harmony between it and the Boards of the interior has happily passed away under the able abministration of Dr. Joseph Holt, who by his wise and conservative course has won the confidence of all interested in sanitary matters. During the regime of the Sanitary Council of the Mississippi Valley, the efficiency of the Mississippi State Board of Health was considered an important factor of the problem of how to prevent the spread of epidemic disease into the interior, should it gain a foot-hold in New Orleans; for all the railroads leaving New Orleans on the east side of the Mississippi river traversed the State of Mississippi, and on the borders of that State was the first defensive line against its further progress. That the Sanitary Council placed confidence in the diligence of the Mississippi State Board is a matter of history. Whether or not that confidence was deserved the future must determine, since happily the occasion for demonstration has not yet arrived, with the exception of the fact that during the years 1882, '83 and 84, there were between seventy-five and eighty outbreaks of epidemic small-pox in different parts of the State, one of which was in Vicksburg and one in McComb City, two of the most crowded centers of population, the others mostly in the thickly-settled negro centers in the Mississippi river bottoms. In none of these instances did the disease spread outside of the limit confining it when taken charge of by the board, and in no case could the infection in one place be traced to another in the State, but all were started from centers of infection imported from other States.

I have been actuated to discuss the subject matter of this paper as exemplified in the organization and present efficiency of the Mississippi State Board of Health, from the fact that with the presence of the cholera in Europe and yellow fever in the tropics, the eyes of the country are necessarily turned upon the city of New Orleans as a port of entry through which foreign epidemic disease may obtain a foot-hold in the United States, and in that case the safety of the interior depends largely upon the efficiency and potency of the Mississippi State Board, for, as before intimated, all the lines of communication of New Orleans with the interior on the east of the Mississippi river penetrate initially the State of Mississippi. Texas and Arkansas guard the lines of communication with the interior on the west side of the river. Mississippi guards the Mississippi river, with the State of Tennessee and city of Memphis in reserve.

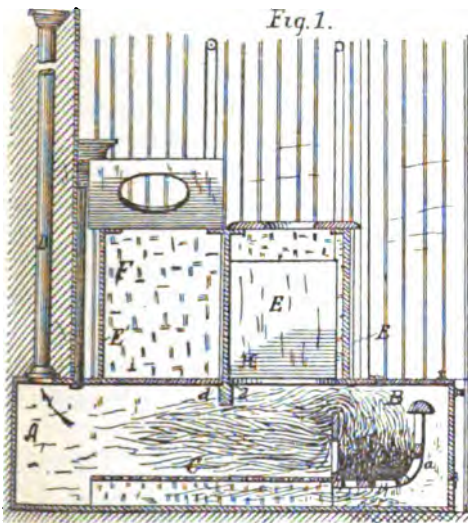
The State Board of Tennessee and the Municipal Board of Health of Memphis are veterans in sanitary warfare, and will give a good account of themselves when the occasion requires. It is a matter of interest then to know on what means of protection the interior States may rely if epidemic disease should gain a foothold in the great southern port of entry; and if energy, rare topographical advantages,

complete authority and an abundant appropriation can avail, the risk of the spread of epidemic disease through the territory of Mississippi is hereafter reduced to a minimum.

### VIII. The Disposal of Human Excreta by Fire.

By W. S. Ross, M. D., of *Madisonville Kentucky.*

"Figure 1 represents a longitudinal view of the apparatus and attachments, and figure 2 is a traverse view of the same."

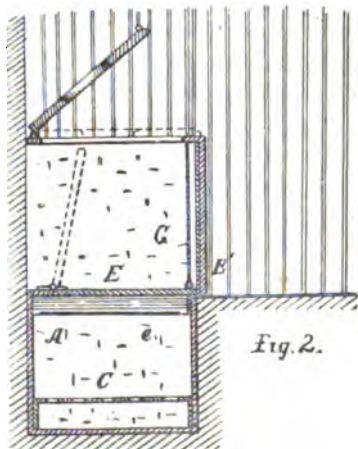


The combination consists, first, in an attachment for a privy, a horizontal metallic casing constituting the depository for the fecal matter, provided with the hinged lids and fire chamber; second, the attachment for a privy, consisting of the horizontal metallic casing with the perforated false bottom *C*, bridge-wall *B*, and grate bars *C*, arranged in about the same horizontal plane with the hinged lids *E* and door communicating with the

grate-surface; third, the combination of the horizontal casing *A* with the perforated false bottom *C*, grate-bars *A*, bridge-wall *B*, hinged lids *E*, privy box, with hinged seats and the connecting means."

"The seat-boards should be made double, the grain of the wood reversed, and glued together; this will prevent warping."

"The hinged lids being connected by a metallic cord, and the furnace lids *E* being heavier than the seats, they work automatically. The furnace lids being heavier than the seat, as soon as the weight of the body is removed from the seat the furnace closes, and so remains except when



being used; the odor is thus confined to the furnace, and forced to escape through the flue or draft-pipe and into the air above the building. The front (*G*) of the privy box is lined with metal, preferably of sheet copper, which extends down beyond the line of the casing a short distance into the depository, and is intended to carry down the liquid matter that may be impinged against it."

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**IX. Physio-Tippling and Medicine-Bibbing—A Warning Against Intemperance in the Use of Drugs.**

By FRANK WOODBURY, M. D.,

Of Philadelphia, Professor of Therapeutics, Materia Medica and Clinical Medicine in the Medico-Chirurgical College.

Sanitary science differs from the ordinary practice of medicine chiefly in regard to the subjects with which it deals. Curative medicine has to do with the individual, and considers everything from the standpoint of the individual. Sanitary science, on the contrary, cares less for the individual than for the type; it is concerned with the welfare, mental, moral and physical, of the race, and the condition of the community in relation with civilization; it is chiefly interested in the production of that large and healthy population which is a nation's true source of wealth and hope of permanent prosperity. It is very deeply interested in the habits of individuals on account of the powerful influence for good or evil which they may exert, by heredity, upon the generations which are to follow.

Man has reached the present high state of development, which he enjoys in the most highly cultivated nations of the earth, by slow and painful progress, committing many mistakes, but steadily rising out of the ashes of former self to nobler and better life. Accompanying this high state of development are influences which constantly tend to cause reversion to a lower type. It is especially against such agencies producing deterioration of the race that sanitary science wages unremitting warfare.

Among the habits which certainly cause physical degradation is the constant use of narcotic and so-called stimulant drugs. With the great problem of intemperance in alcoholic liquors, society is now engaged; and as attention has been so constantly directed towards it, I need not further concern myself with it at present. Nor will I discuss the evil effects of tobacco upon the human frame; with these you are familiar, or at least know where to find abundant information if you desire it.

The object of this paper is to direct public attention to a habit which has insidiously crept into our life as a people, and which in my estimation has attained sufficient proportions to warrant consideration at such a conference as this.

Not long ago, while in a Chestnut street drug store, I observed a richly-dressed but poorly-nourished woman approach the soda water fountain and ask for a glass of soda water containing bromide of potassium. She was evidently nervous, but the thought occurred to my mind that the natural way to overcome nervousness (or nervelessness) would have been to alter the habits of life which produced the morbid condition, rather than to overwhelm what little vitality might be left in her body with nerve sedatives. Inquiring of the drug clerk, I found that it was a common habit for customers to ask for medicinal substances in soda water. Leaving out of question the possible ill effects of the soda water itself, I found that potassium bromide, aromatic spirits of ammonia, soda mint, sodium bicarbonate, acid phosphate, tinctures and elixirs, were in very frequent demand. In another drug store, I saw a prescription calling for a mixture containing chloral, posted up behind the counter. I inquired why it was placed there, and was informed that it was merely for convenience, as it had been refilled over a hundred times. Here was a case in which a patient having received a prescription for temporary use, had continued taking it upon his own responsibility, certainly, in my opinion, reducing himself to a physical wreck and inviting early death. I have been informed by druggists that should a physician prescribe a mixture containing alcohol, if it be at all palatable, the order to re-fill it will come again and again, and yet again.

We all know how the opium habit is formed—few there are who realize what a hold it has taken upon the people. The drinking of ether and similar anodyne mixtures is not uncommon, and too often prepares the way for indulgence in grosser forms of intemperance.

This is not intended to be a statistical paper, or I would proceed to show by figures how the demand for remedies, acting upon the nervous system particularly, has within comparatively few years experienced a large increase. The bromides only a few years ago were but little used; now it is estimated that at least 200 tons are used every year in this country alone. Of chloral hydrate, introduced in 1869 by Liebreich, it was said that in America and England alone, a ton was consumed each day, eight years ago; it cannot be less now. Nor will I speak of the vast amounts of the preparations of cinchona, of opium and of mercury; or of the alkalies, iodides, and digestive ferments, which flow in a steady current from the stills of our manufacturing pharmacists down the throats of a confiding community.

But this, although sufficiently large, is a comparatively small part of the medication of the masses. Try to form an idea of the capital invested, and the fortunes made in the sales of patent medicines. Does any one contend that all this supply is needed to meet a natural demand? Why is it, the sanitarian asks, that man, the paragon of animals, requires so much more medicine to keep him alive than his more or less domesticated brethren? Why is it that civilized man in



the nineteenth century, consumes larger quantities of narcotic drugs—morphine, chloral, bromides, ether and chloroform—than his forefathers? What is to be the result upon the population in the twentieth century? Can we not see abundant evidence of the bad effects of over-medication in the weakened digestion and impressionable nervous system, which have become almost universally recognized as characteristic of American life?

The anarchists the other day in Chicago, who wrecked a drug store and revelled in wine of colchicum, and paid the penalty for their indulgence with physical suffering and death, are but an exaggerated illustration of what is going on around us every day.

In saying this, I hope I will not be misunderstood. This is not a tirade against the use of medicine, but a warning against its too prevalent abuse. It is not a denunciation of doctors, but on the contrary it will be my endeavor to show that the taking of medicine—and especially the administration of medicine to young children—is a matter worthy of sober, serious consideration; and, as far as possible, should be undertaken only by competent medical advice.

Among the causes for the enormous drug trade in this country, is to be counted, undoubtedly, the over-crowding of the medical profession. Until within a few years there were practically no restrictions in this State upon the practice of medicine—the law did not require a doctor to be either a scholar or a gentleman. Thousands of half educated or entirely uneducated men, furnished with cheap diplomas, were set loose to prey upon the community; and drug stores sprung up at nearly every corner.

In addition to this free dispensaries were started in all our large cities, and the public systematically trained to ask for medicine as regularly and naturally as they do for their daily bread.

But this is not all. The patent medicine advertisements in the public prints warn us that hundreds of thousands of dollars are spent annually in the effort to induce our fellow citizens to purchase and consume medicines which otherwise they would not buy. I do not mean to say that all proprietary medicines are necessarily worthless and injurious; but I do say that which I do know, that the greater part of the demand for them is artificial, fictitious, and is due to persistent advertising.

Another reason for the extraordinary demand for medicine is of a different kind, and has its roots in the minds of the people. We are impatient and illogical. We do those things which we should not do, and leave undone the things which we ought to have done. This is preëminently applicable to our eating. A large proportion of this community is suffering constantly from indigestion in some form or other. Does this lead men to carefully study their capacity for digestion of different articles of food? No; they prefer to keep on eating and drinking the very things which make them sick, and then call

upon the druggist for aid. The growth within a few years of the demand for digestive ferments is astonishing. Pepsin and pancreatine in various forms, constitute a large proportion of the daily sales of city druggists.

Let us stop for a moment to consider what the effect of artificial digestion must be. If the pepsin be introduced by the mouth our stomachs will naturally cease to secrete it, and consequently, according to physiological law, will lose the function. We have largely lost the use of our grinding teeth because our ancestors ceased to eat roots and to crack nuts, and took to boiling their meat and vegetables, and now it appears that we are fast losing our stomachs also. It has been said that were it not for the constant influx of fresh blood from the country, large cities would be depopulated in a few generations. This I believe is most true in those communities where the greatest amount of medicine is consumed. Our babies are fed with artificial foods because the defective vitality of the mothers forbids nursing them; when they suffer with indigestion and cry, they are drugged with soothing syrup and paregoric; if they venture to cough they are dosed with squills and antimony; and in between the doses they are given castor oil, worm-lozenges, gingerbread, catnip-tea, soda-mint and calomel, until they are large enough to drag their sickly little bodies to school; then they have cod liver oil and iron and quinine to keep them going; and when nature kindly gives them a fever in order to give them some rest in bed, they are dosed *ad nauseam* by officious friends and attendants. In later life their weak physical frames and poor digestion are scarcely equal to the demands of modern life, and there is constant resort to the whisky bottle to supply a delusive feeling of strength and vigor. There is a sober truth underlying the statement of the toper, who gave as his excuse for drinking, that "he was brought up on the bottle and never got weaned." Is it any wonder that in civilized communities men scarcely live out half their term of life; or that so many dying can repeat the words of the Patriarch, "Few and evil have the days of my life been?" One-fourth of all the children born in civilized countries die before they reach the fifth year of age, and the proportion is even greater in large cities. Among the recognized causes of weakened vitality in children I wish to place the abuse by parents of medicines acting upon the nervous system, and especially alcohol, tobacco, opium, chloral and the bromides.

It is not time to look for some improvement in this regard? A great change has taken place in our views of disease within comparatively few years. Recent studies into the causation of diseases has shown us that they are largely external in their origin, and the symptoms which were heretofore regarded as the disease itself, are in reality only evidences of the reaction of the system against the

disease. Modern medicine, therefore, instead of combating the symptoms, aims at the cause of the malady, and endeavors to aid nature and not to oppose her. We now know that morbid processes are essentially conservative, and that inflammation instead of being a condition to be dreaded and combatted, is nature's reaction against an irritant; it is not the cause but the effect of disease.

As sanitarians, we would teach the public that they should bear with patience the ills that flesh is heir to; that disease is very largely affected by mental states, and that physical troubles are made greater by thinking about them. Medicine is a two-edged sword, and, if capable of doing good, is also capable of doing harm; unfortunately, the harm is not limited to the individual, but affects the future of the race. Physic-tipping and medicine-bibbing is simply a form of intemperance. The taking of medicine is a matter of grave importance, and should only be done by competent medical advice, and should not be continued longer than the emergency demands.

I would make an especial plea for the children, who are daily sacrificed to the mania for medicine-giving. I was called not long ago to see a delicate little girl, seven years of age, whose ignorant and brutal father had administered eleven cathartic pills. Such instances are not rare in the experience of physicians practicing in the cities. Deaths are constantly occurring from the administration of nostrums to young children: how much permanent ill health is produced we may only surmise. We have laws regulating the sale of certain well-known poisons, but no law regulating the manufacture and sale of so-called patent medicines—containing colchicum, opium, alcohol, digitalis, antimony and a legion of other poisonous drugs—which the public consume in immense quantities to the evident detriment of health.

In conclusion, for the purpose of checking this evil, I would recommend:

1. The examination of all proprietary medicines by a government or State commission of experts, which shall have power to permit the sale of such as are harmless or especially likely to prove serviceable, and to prohibit the sale of all which are liable to do injury, and particularly those which are found to be worthless and frauds upon the public. Such a commission was appointed by the Japanese government several years ago, and has been found to be of great service in that country.

2. The instruction of the public to properly estimate drugs, and to regard every unknown medical agent as dangerous and endowed with capacity for harm. Let them endeavor to escape the caustic criticism of a Molière upon those who "pour medicine about which they know little, into bodies about which they know less, in order to cure disease about which they know nothing at all."

**X. Overwork and Sanitation in the Public Schools of Philadelphia, with Remarks on the Influence of Overwork in the Production of Nervous Diseases and Insanity.**

By CHARLES K. MILLS, M. D., *President of the American Neurological Association, etc.*

In 1860 I was admitted to the Boys' Central High School from a school in the outskirts of Philadelphia, the first pupil that had ever been sent from this particular school. For four years, except during a few weeks in 1862 and 1863, when with other boys of the school, and some of its teachers, I was doing military duty on the Maryland border, I was a pupil in the high school. Later, I passed two to three years in teaching in Philadelphia schools.

For many years most of my time has been spent at medical work; but a Philadelphia physician is thrown much in contact with teachers, pupils, and the parents of pupils; and it has always been of interest to me to watch the effects of the educational methods in vogue in this city upon the health, both of pupils and teachers.

Taking up the question of overwork and sanitation in Philadelphia public schools, I can only deal in the most general manner with it in the brief time at my disposal. The subject can only be touched upon. It embraces matters which would require for their full consideration many hours and many pages. My object is, simply, to call attention from the standpoint of a physician, who has also been an educator, to a few of the most important health topics connected with our public schools. Such a subject is surrounded with difficulties, although before attempting to discuss it I scarcely realized these difficulties to their full extent. It is worth repeating, trite though the saying be, that education is the greatest problem which we are called to solve. Every intelligent member of the community can, however, if he chooses, do something to advance and spread knowledge with reference to this important question.

I shall first give the results of some personal investigations into the present status of Philadelphia public schools.

During the progress of my inquiries, a gentleman connected with the public school system asked, "Why are we so much disturbed here about overwork? We hear of no such agitation abroad, where we know, as in Germany for instance, great intellectual results are obtained." This is a mistake. Much attention has been paid abroad in recent years to this subject. In Denmark, Dr. Hertel, the municipal medical officer of Copenhagen, conducted a year or two ago, a series of investigations in the high schools of Copenhagen, and has published the results of his work in an interesting book,\* which has been re-

\*Overpressure in High Schools in Denmark, by Dr. H. Hertel. Translated from the French by C. Godfrey Sørensen, with introduction by J. Crichton-Browne, M. D., LL. D., F. R. S. London: Macmillan & Co., 1885.

cently translated. This book contains reference to similar work done in Sweden, Germany and elsewhere. In London, some two years since Dr. J. Crichton-Browne, a distinguished authority in mental diseases, and Lord Chancellor's Visitor in Lunacy, investigated a number of the elementary schools in London, and awakened a controversy in educational and government circles, the like of which has not been known for a long time.

Through the courtesy of Dr. Browne I have received the official documents† bearing upon this investigation, which are of great interest and value.

I made a limited but systematic personal investigation of certain schools, taking for this purpose two contrasting sections (so far as the social and home advantages of the children were concerned), and the girls' normal school and the boys' high school. I also made inquiries, either personally or by letter, of many parents, of members of the board of education, of the superintendent and assistant superintendent of the public schools, of a large number of teachers, chiefly principals of the grammar, secondary and primary schools, and of professors and teachers in the high school and normal school.

On beginning my inquiries, I found at once that the public school system of Philadelphia was in a state of confusion. At one end of the system, the primary and secondary schools were working under a new graded method introduced by the superintendent, Mr. James Mac-Alister; at the other, the high and normal schools were at work under an old method, graded it might be, but on entirely different principles; and between these two extremes were the grammar schools for girls, in which the pupils, under high pressure, were working for the final test of a severe competitive examination to admit them to the normal school, and the grammar schools for boys, in which a quota method of promotion to the high school had taken the place of competitive examinations.

A circular having certain queries printed upon it was prepared. I purposely avoided providing a place for the names of scholars, in order that the pupils answering should not be identified. I am sorry to say that they were very generally identified, although not by me.

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† Elementary Schools (Dr. Crichton-Browne's Report.) Return to Two Addresses of the Honorable the House of Commons, dated 19th June, and 31st July, 1884;—for, (Address 19th June, 1884.)

“Copy of Report of Dr. Crichton-Browne to the Education Department upon the Alleged Overpressure of Work in Public Elementary Schools.” (Lord George Hamilton.)

(Address 31st July, 1884.)

“Copy of Mr. Fitch's Memorandum relating to Dr. Crichton-Browne's Report in continuation of Parliamentary Paper, No. 293, of the present session.” (Mr. Mudda.)

Ordered by the House of Commons, to be printed, 24th July and 4th August, 1884. London: Printed by Henry Hansard & Son, Printers to the House of Commons.

The following were the questions included in the circular: Class or division? Age? Number and names of studies? Number of hours of school work? Preparation? Recitation? Number of hours of home work in preparing lessons? Number of hours of sleep? Whether or not the pupil suffered from headache, nervousness, dyspepsia, eye troubles, or any form of ill health, that could be fairly said to be due to school studies?

These circulars, with the permission of the Board of Education and the directors of the schools, were distributed to the pupils, the objects of the questions were carefully stated, and the pupils were told to take the papers home and carefully answer after consultation with their parents.

In this way investigations were made in four grammar schools, two for girls and two for boys, and in the boys' central high school and the girls' normal school. I will give, in as condensed a manner as possible, the results with reference to home work, and the effects of school studies upon health. I have not adopted the averaging method in presenting these results with reference to home work, but one which I believe is better; that is, I have arranged the results so as to show how many children studied six hours or more, five, four, three or two hours, or one hour, or more or less than one hour. In an averaging method, a few may cause the average to be high or low. Where four, three, two hours or one hour are spoken, the report was as to this time or more.

In one girls' grammar school the total number which reported was 343. The report was as follows: Studying at home six hours, none; five hours or more, 1; four hours, 1; three hours, 33; two hours, 132; one hour, 154; less than one hour, 22.

One hundred and seventy-nine (179) out of the 343 reported that they suffered in some way from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 124; nervousness, 57; dyspepsia, 3; eye troubles, 54; miscellaneous ailments, 5. This made a total of 243, more than one complaint being reported by 64.

In another girls' grammar school, the total number reported was 240. The report was as follows: Studying at home six hours, none; four hours or more, 1; three hours, 11; two hours, 48; one hour, 144; less than one hour, 35; not reporting, 1.

Out of 240, no less than 139 reported that they suffered from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 107; nervousness, 38; dyspepsia, 3; eye troubles, 33; miscellaneous ailments, 2. This made a total of 183, more than one complaint being reported by 44.

In one boys' grammar school, the total number which was reported was 169. The report was as follows: Studying at home six hours,

none; four hours or more, 2; three hours or more, 7; two hours, 25; one hour, 44; less than one hour, 79; not reporting, 12.

Seventy (70) out of the 169 reported that they suffered in some way from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 45; nervousness, 10; dyspepsia, 3; eye troubles, 24; miscellaneous ailments, 3. This made a total of 85, more than one complaint being reported by 15.

In another boys' grammar school, the total number which was reported was 188. The report was as follows: Studying at home four hours or more, none; three hours, 1; two hours, 18; one hour, 126; less than one hour, 42; not reporting, 1.

Fifty-three (53) out of the 188 reported that in some way they suffered from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 29; nervousness, 10; dyspepsia, 3; eye troubles, 20. This made a total of 62, more than one complaint being reported by 9.

In the girls' normal school, the total number which reported was 572. The report was as follows: Studying at home six hours or more, 2; five hours, 14; four hours, 36; three hours, 134; two hours, 235; one hour, 120; less than one hour, 31.

Two hundred and sixty-seven (267) out of the 572 reported that in some way they suffered from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 177; nervousness, 70; dyspepsia, 12; eye troubles, 82; miscellaneous ailments, 30. This made a total of 371, more than one complaint being reported by 104.

In the boys' central high school, the total number which reported was 123. The report was as follows: Studying at home six hours or more, 1; five hours, 6; four hours, 15; three hours, 39; two hours, 40; one hour, 22.

Out of the 123, only 19 reported that they suffered from ill-health as the result of their school studies, the detailed report as to the form of ill-health being as follows: Headache, 9; nervousness, 3; dyspepsia, 4; eye trouble, 5; miscellaneous ailments, 1. This made a total of 22, more than one complaint being reported by 3.

The results, with reference to home work and ill-health, show some overwork in the public schools of Philadelphia, but great improvements have taken place in recent years. Where pupils now report two, three or four hours of home work, I well remember that, twenty or more years since, five, six, seven and even eight hours were frequently spent at work out of school. A good friend asserted to me the other day that the school children of Philadelphia were suffering from underwork. This may be the case in special schools—it may be the case in certain sections—but I do not believe that any such general statement could be substantiated. The children are suffering, in

not a few places, from bad methods of work rather than from genuine overwork, because one grade of the school system does not dovetail with others—the gaps are too great, the changes from one level of the system to another too abrupt. I believe that overwork still exists in the public schools of Philadelphia—less than formerly and decreasing, but sufficient to call loudly for remedy. I make this assertion with diffidence, knowing that it may be antagonized, and feeling that possibly others may have better means than myself of knowing; but still the opinion is one reached as the result of experience and investigation. The overwork is most marked in the higher grades of grammar schools, more particularly in the girls' grammar schools and in the girls' normal school.

In the primary and secondary grades there should be no home work. Both the teaching and the studying should all be done in school. In the grammar grades home work, to a certain extent, should be allowed; but this should not exceed, in the lower grammar grade, one hour a day; that is, the compulsory home work should not be more than the average child could get through with in one hour. In the higher grades it should not be more than one hour and a half, or, at the most, two hours. Recall the figures just given, and it will be seen that, in some of the schools, three hours or more, and often two hours or more, were spent in home study. When you come to the girls' normal school and the boys' high school, the compulsory home work certainly should not exceed what the average pupil of these schools could do in two hours, or, at most, in two and a half hours. One professor in the high school, a conservative man of long experience, said to me that he believed that only three studies a day should be required to be done at home, and that these should be of such a character as not to require the average boy to devote more than half an hour to each of them. Far different is the state of affairs shown by the above reports.

Concerning the secondary schools now working under the "new system," as it is called, the system inaugurated by the praiseworthy efforts of Mr. MacAlister, I shall have only a few words to say. The method does not insist on any home work, in fact insists that there shall be none in the secondary grades. For this reason, at first I paid but little attention to the question of home work in the secondary grades. My attention was called to the subject, however, by a parent claiming that his child was overworked in one of the secondary schools. I went into a secondary where at the time by actual count forty-eight boys were present. I asked how many studied their lessons at home, and all but three held up their hands. In order to encourage them to tell the truth, I said, "You know, boys, that you should not study at home." The teacher said to me nervously, "Don't say that; you will spoil them." Of course I did not say anything further. They were certainly expected to study at home. In another secondary school I



asked the teacher whether any of the pupils studied at home. She said practically they all did, "Why is this?" I asked, "are the pupils not expected to get through their work in school?" "I suppose that is the idea," she replied, "but examination is coming round, and it is by that we are measured." I said "Yes, but the examinations are in your own hands." She replied that the five highest and the five lowest papers had to be sent to the superintendent.

I am not inclined to attack any individual or any particular school, even schools in which there seem to be, from my own standpoint, defects and shortcomings. Why does the ambitious principal of a girls' grammar school stay hour after hour during school, working during recess and after school hours, taking home her papers, and at times, I believe, her pupils as well? It is that she may sustain her reputation in her own section or school. She feels that she is obliged at almost any cost to have a certain average number of pupils admitted from her highest grade to the normal school. In individual cases teachers may be at fault, but on the whole the difficulty is in the system. It is only by having a system thoroughly graded from bottom to top, from the primary to the normal and high schools, that we can hope to get rid of defects and shortcomings. This has been pointed out by Mr. MacAlister in his report to the board of education on the revision of the grammar school course of instruction. I believe that it cannot be contradicted, that in the grammar schools of Philadelphia, as at present conducted, the pupils are required to do in from one and a half to two years what the school children of Boston, New York and some other cities are allowed four years to accomplish. Philadelphians may be heroes, the descendants of heroes, and their children heroes in the making; but brave and strong as we are, we cannot hope that our children shall make the same conquests in two and a half years that require four years for the children of Boston and New York.

In some schools fewer subjects should be taught. I believe this to be the case, to some extent at least, in the boys' high school, in the girls' normal school, and in some of the grammar grades, as will be shown by a rapid glance at the following list of the studies pursued in some of the higher schools:

The Boys' Central High School: Logic, composition, elocution, English literature, astronomy, uranography, calculus, analytical geometry, trigonometry, geometry, Latin, algebra, mental science, German, political economy, physics, chemistry, natural history, physical geography, anatomy, physiology, mensuration, higher arithmetic, mechanical and engineering drawing, shades and shadows, orthographic projection, linear perspective.

Girls' Normal School: Geology, physiology, botany, mythology, physical geography, music, logic, rhetoric, composition, chemistry, natural philosophy, astronomy, moral science, literature, Constitution

of the United States, free-hand drawing, sewing, drawing, trigonometry, arithmetic, algebra, geometry, theory and practice of teaching, physical exercises, methods of teaching, orthography, elocution, reading, penmanship, general history, literature and etymology.

Girls' Grammar School, Senior Class: Reading, composition, grammar and parsing, etymology, spelling, arithmetic, mensuration, algebra, physical geography, English history, Constitution of the United States, literature, physiology, drawing, writing and sewing.

Girls' Grammar School, B and A Grades: Reading, composition, grammar and parsing, etymology, spelling, arithmetic, geography, history of the United States, drawing, writing, object lessons and oral instruction, sewing.

In the boys' grammar schools the list of studies is similar in general scope.

Certainly a few of these subjects might either be dispensed with, or the amount of time given to them reduced. Far too much time is devoted to some subjects, like etymology, for instance, which return large averages but do not call out and develop the thinking power of the children.

With reference to the number of hours of school work but little of value was learned. Most of the time in school—in not a few cases all of it—was occupied with recitations. Even when a certain number of hours were supposed to be set apart for preparation in school, this time was usually not strictly used for this purpose.

Judging from the answers to the printed queries, the pupils of the Philadelphia public schools do not suffer much from want of sleep. The returns indicate an average of eight to nine hours' sleep for the large majority of those reporting. I was unable, however, in my limited time to obtain special details as to sleep. The hours reported doubtless in many cases indicated rather the time in bed than the actual amount of sleep. Particulars as to disturbed sleep, dreams, etc., were not obtained.

Dr. Crichton-Browne, in his investigations of the elementary schools of London, interrogated a large number of children with reference to sleeplessness. He found that the testimony of scores of children that they lay awake till midnight or one or two in the morning remained unshaken on cross examination. He tells us that arithmetic would appear to be the worst enemy of tired nature's sweet restorer, for one of the commonest explanations of sleeplessness given to him was "Please, sir, I can't get to sleep for thinking of my sums." One boy said that conscience kept him awake, by which it turned out that he meant a consuming feeling of remorse for not having passed his standard. Home lessons, he believed, were responsible for a good deal of sleeplessness. They keep up whatever over-pressure there may be in the school, worry the child who has to prepare them amid distractions and difficulties, and prevent that even subsidence of brain

activity which is the best prelude to a good night's rest. Out of 4,300 boys and girls examined as to the prevalence of sleeplessness, 1,668 cases of sleeplessness were reported, that is a percentage of 38.8. In one school of 381 boys he found 129 of them were sleep-talkers, and 28 were sleep-walkers. In a school of 432 girls he found 17 somnambulists, and in another school of 382 there were 20.

The answers to the question with reference to ill health attributable to school studies gave the following results :

Girls' grammar school, 124 cases of headache out of 343 reporting.

Girls' grammar school, 107 cases of headache out of 240 reporting.

Boys' grammar school, 45 cases of headache out of 169 reporting.

Boys' grammar school, 29 cases of headache out of 188 reporting.

Girls' normal school, 177 cases of headache out of 572 reporting.

Boys' high school, 9 cases of headache out of 123 reporting.

Girls' grammar school, 157 cases of nervousness out of 343 reporting.

Girls' grammar school, 38 cases of nervousness out of 240 reporting.

Boys' grammar school, 10 cases of nervousness out of 169 reporting.

Boys' grammar school, 10 cases of nervousness out of 188 reporting.

Girls' normal school, 70 cases of nervousness out of 572 reporting.

Boys' high school, 3 cases of nervousness out of 123 reporting.

A very small percentage reported as suffering from dyspepsia

Girls' grammar school, 54 cases of eye trouble out of 343 reporting.

Girls' grammar school, 33 cases of eye trouble out of 240 reporting.

Boys' grammar school, 24 cases of eye trouble out of 169 reporting.

Boys' grammar school, 20 cases of eye trouble out of 188 reporting.

Girls' normal school 82, cases of eye trouble out of 572 reporting.

Boys' high school, 5 cases of eye trouble out of 123 reporting.

Let me be perfectly fair about this matter of ill-health reported as a result of school studies. The answers to this query are of course open to considerable criticism, but the method adopted is perhaps the best after all, to get at any results in a reasonable time. Crichton-Browne got answers by the holding up of hands, which was not as good a plan. I insisted that in answering this question the pupils should consult with their parents. The percentage of ill-health reported as due to school work should undoubtedly be diminished.

One teacher came to me and said that she thought the question as to ill-health quite unfair ; that, for instance, a certain girl who had reported that she suffered from indigestion as the result of school work, had to her knowledge eaten a mince pie the day before. One young lady reported (I think that 'here is a vein of humor in this young lady,) that she suffered from indigestion and several other thing, but especially from freckles. A number of misunderstandings, or at

tempts to make misunderstandings, arose, but I believe that notwithstanding these, and the fact that many of the cases of ill-health ascribed to school work may have been due to other causes, a large percentage of the answers returned can be taken as of value. If we even diminish the returns by one-half, we still have a larger percentage of ailments than we should have under any school system. I did not attempt to get any details as to special forms of nervous disease due to school work. Under "nervousness" such affections as chorea, hysteria, neuralgia, etc., were reported. My object was to get at general facts and opinions. Among the acute nervous disorders likely to occur in childhood and youth as the result of mental overstrain, particularly that which prevails under a pernicious school system, are headache, neuralgias, general nervousness, sleeplessness, hydrocephalus, chorea, hysteria, hystero-epilepsy, insanity of pubescence, and temporary albuminuria. To this subject I have already called special attention in one of the Toner Lectures.\*

The number of cases of headache reported is certainly very large. Much of it, I believe, was attributable to the school.

Crichton-Browne† speaks with reference to this question of headache in school children as follows: "In 1879 Dr. Treichler, of Bad Leuk-Bern, read to the German Society of Natural Historians and Physicians assembled at Baden-Baden, a paper in which he maintained, as a result of investigations at Darmstadt, Paris, and Neuenburg, that one-third of the pupils in public schools suffer from habitual headaches, which are becoming year by year more common amongst boys and girls of school age, and which are to be attributed to brain exhaustion caused by school work. Dr. Treichler's statements were received with general incredulity. In commenting upon them, the *Times* remarked that while we may reasonably hope that Dr. Treichler has overstated his case even as regards France and Germany, we may be quite sure that as regards this country there is no state of things at all parallel to that which he describes. Some inquiries which I myself instituted at that time led me to believe that he had exaggerated the evils which he deplored, but the more extended and minute inquiries which I have now been able to carry out have conducted me to a very different conclusion. Whatever may have been the case in 1879, it is now certain that more than one third of the children attending Elementary schools in London suffer from habitual headache."

I have no statistics from personal observations with reference to hydrocephalus, but will quote here the remarks of Crichton-Browne‡

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\*Mental Overwork and Premature Disease among Public and Professional Men. Ninth Toner Lecture. Delivered March 19, 1884, and published by the Smithsonian Institution, January, 1885.

†Report on Elementary Schools.

‡Op. cit.

on this subject: "That hydrocephalus is sometimes brought on by excessive study in children of sickly or unsound constitutions is an accepted truth in medicine; and that the increase in the mortality which it occasions during education and post-education ages is in some measure to be attributed to enforced mental application, is, I think, rendered probable by the fact that the rate of increase has been decidedly higher during the last ten years, when education has been so largely extended, than it was in the previous ten years, when education was comparatively neglected. Any medical man will, I am persuaded, find in the statistics of hydrocephalus, to which, as I have said, he would in the first instance turn in any inquiry into the lethal effects of education and over-pressure, enough at any rate to create grave misgivings in his mind, and to convince him that there is need of watchfulness and further inquiry."

It has been my lot to have under observation a large number of cases of chorea occurring in the school children of Philadelphia, in many of which cases mental over-pressure seemed to be distinctly the exacting cause of the attack. Crichton-Browne, however, strange to say, did not find one case of this disorder in any school which he visited. He was told of cases which had arisen in school, but which had been immediately withdrawn. He met many cases of muscular eccentricity closely bordering on chorea. Out of 6,580 children he found 48 who exhibited peculiar movements, antics or grimaces, especially when agitated, or called upon to do anything. Dr. Allan McLane Hamilton, as the result of some investigations conducted in New York, found that 20 per cent., of young children in the public schools displayed choreic movements of greater or less severity. Crichton-Browne also made inquiries as to stammering, and found a comparatively large number of cases in the lower standards, the effect diminishing decidedly in the higher standards of the elementary school.

As I have said in another place,\* the injurious effect of American school or college life in the production of hysteria is undoubted, and should be thoroughly appreciated. Our educational processes act both as predisposing and exciting causes of this disorder. Both in our private and public institutions, the conditions are frequently such as to lead to the production of hysteria or to confirm or intensify the hysterical temperament. In our large cities all physicians of considerable practice are called upon frequently to treat hysterical girls or boys.

Clarke has considered some of these questions, and particularly with reference to the physiological processes of menstruation, and its bearing on the inability of girls to maintain equally with boys the stress of such competition.

A form of insanity which has within recent years been studied with care by alienists, is known as Hebephrenia, or the insanity of pube-

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\*A System of Practical Medicine, by American Authors, vol. v. p. 218.

science, an affection "characterized by mental enfeeblement, marked by a silly disposition, following a preliminary period of depression, which has the same tinge as, without the depth of, that characterizing melancholia, and which coincides with or follows the period of puberty."\* It is found in subjects between the fifteenth and twenty-second year usually; and as a rule, the termination is unfavorable. Many of the patients pass into a condition of secondary degeneration, from which they never recover. Undoubtedly, our forcing methods of education have something to do with the production of this form of insanity in special cases. Where, particularly, any hereditary pre-disposition to mental disease exist, the probability of mental over-pressure resulting in the development of insanity at puberty or adolescence, should always be borne in mind. "Puberty," says Clouston,† "is the first really dangerous period in the life of both sexes as regards insanity, but it is not nearly so dangerous as the period of adolescence, a few years afterwards, when the body as well as the organs of reproduction are more fully developed."

The question inevitably comes up of examinations, and the methods of promotion from one grade of school to another. The figures which I have given do not touch upon this important point, although I made many inquiries as to examination and promotion. The two, three or four hours of work daily during the school term is not the whole of the matter. At certain periods in some of the grammar and normal schools, the pupils have what are termed reviews for examination. During these reviews times the amount of home work is, on the average, double, so far as I could learn from the parents and the children. Sometimes a day of non-attendance at school occurs between two days of examination. On such occasions, many of the pupils study three or four hours of the first day after going home, the whole of the next day, and even on the third day before going to school.

I do not believe that you can have a school system without examinations. I do not believe that you can promote children from one grade to another without some standard of qualification. The standard should be so made, however, that the promoting could be done by the most natural and reasonable process. The question of "quota" methods and "competitive examinations" here comes in for decision. I find very broad difference of opinion among the members of the school system, teachers, controllers, superintendents, etc., on this point. One holds one view, a second has entirely different opinion, while a third has a somewhat diverse view. I can simply say that for the health and general welfare of the pupils, a modified quota method, under a perfected system, is what we need in this city. An absolute quota method does not work well. What is the result in the boys' high school? Here are some of the statistics of one of the classes—the

\*Insanity, Its Classifications, Diagnosis and Treatment. By E. C. Spitzka, M. D.

†Clinical Lectures on Mental Diseases.

present class A—which I have obtained through the courtesy of Prof. Riché. They show the percentage of pupils which have left in the different classes. The whole number admitted was 133. Left in H, 13; in G, 26; in F, 33; in E, 22; in D, 5; in C, 4; in B, 3. This leaves 27 pupils out of the 133 who started in nearly four years ago, 106 having dropped by the wayside. Doubtless some of these pupils have left on account of financial, social or domestic reasons. Discounting these, I think a fair per cent. of them left because they were unprepared to grapple with the subjects presented to them. This is not necessarily the fault of the schools below. It is the fault of the system. As I have said, I believe in some form of the quota method when the system is perfected so that the normal and high schools and grammar schools will fit into each other properly. The pupils come to the high school and are admitted on a certain average, say 65. That does not express it all. A boy gains an average of 65, but he may have a cipher on some important branch, such as arithmetic. How is he thereafter to grapple with algebra, geometry, trigonometry, differential calculus and mathematical astronomy? The result is not so much actual overwork and break-down as it is depletion of the school, the pupils leaving to escape the strain. If the system was perfectly graded so that the time in each grade of the school was sufficient, and the pupils were brought up to certain standards carefully and naturally, examination with a minimum average required in every branch would be desirable.

One practical objection to the competitive examination system expressed to me by a number of principals of boys' grammar schools springs from the advantages which some schools have over others in numbers, surroundings, and home influence, so that admissions would be almost confined to them, the weaker sections being excluded, in large measure, from representation in higher schools.

A few years ago the system of seating, and of lighting with reference to seating, was extremely bad. This has been largely corrected, owing to the attention called to the subject by Mr. A. M. Spangler, of the board of education, and Dr. S. D. Risley, the distinguished ophthalmologist. Dr. Risley a few years ago made a series of investigations, which have been published,\* into the condition of the eyes of the public school children of Philadelphia, which I believe resulted in great good. He called attention to the high percentage of school children suffering from weakness of sight of various kinds, and also discussed the cause of and remedies for the evil.

What are some of the remedies for the evils of overwork which we have thus been indicating? In the first place, so far as the rising gen-

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\* Weak Eyes in the Public Schools of Philadelphia. The Report of the Committee on Examination of the Eyes of the Children in the Public Schools of Philadelphia. By S. D. Risley, A. M., M. D. Extracted from the Transactions of the Medical Society State of Pennsylvania for 1881.

eration is concerned, it is more important than anything else that better methods of education—more thoroughly graded and systematized methods—should take the place of the immature, imperfect and unnatural processes now generally in use. In a strict sense, it is often not overwork, that is an over amount of work that is at fault, but rather badly arranged and regulated methods of work. The great remedy is to improve the school system all along the line.

Education is not arranged as it should be to develop the brain by a natural process from within outward. from center to periphery. Any system of education is wrong which attempts to overturn or change the natural order of development.

"In a wide sense," says Crichton-Browne,\* "education and practical medicine have the same aim. The true conception of health is that it consists in the harmonious performance of all the functions of the being. From the lowest plant to the highest animal we unhesitatingly assume the health of a being as the most perfect manifestation of its life, and to secure this most perfect manifestation of vitality is alike the object of the school-master and the physician. They both strive to influence the organism so that it may be brought into conformity with the conditions of its existence: the school master, while inherent potentialities are becoming actualities, and while vital susceptibilities are most active; the physician, whenever harmony of function has been disturbed. The methods of the school master are mainly psychical; those of the physician are mainly physical; but he would be a poor physician who ignored the fact of consciousness, and he would be a useless schoolmaster who gave no attention to the working of material forces. The schoolmaster may be the physician's best ally, by training the intelligence to the best conditions of health, and inculcating those principles of personal and social ethics from the neglect of which disease and death so often arise. And the physician may aid the schoolmaster in his task by teaching the laws under which the union of conscious intelligence and the bodily frame is maintained and a condition under which the capacities and faculties of the mind may be most successfully evoked and strengthened."

The system introduced by Mr. MacAlister into Philadelphia has not been working long enough even in the lower schools—primary and secondary—to allow of any reliable investigations and comparisons as to the physical condition of the children as compared with the same under the old system.

Mr. D. W. Hutchin, one of the grammar school principals, in answer to an inquiry, writes to me as follows: "As far as I can learn from the teachers, there seems to be no observable difference in the health of our public school children of the lower grades, under the new order of things, from what it was before the old had passed away. To my

\* Education and the Nervous System, by J. Crichton-Browne, M. D., LL. D., F. R. S. Reprinted from the Book of Health.



inquiries upon the point, nearly all the teachers answer, 'I have not noticed any change.' As a matter of fact, few of the teachers seem to be looking for the good results of our new methods.

"The published reports of the board of education show a slight decrease in the amount of sickness, and a corresponding increase in the attendance. In 1882, the number absent on account of sickness was 9.58 per cent. of the number belonging during the year, while in 1883 it was 9.19 per cent., and in 1884 but 8.50 per cent.

"The average attendance during the same years, excluding the sick, when compared with the average number belonging, was as follows: 1882, 79.86 per cent.; 1883, 81.03 per cent.; 1884, 82.27 per cent. Believing that these figures do show a tendency towards a better state of things, I take the liberty of sending them to you."

One grammar school principal writes to me with reference to this matter as follows: "The grammar schools are not feeling the full effects of the new system, but I believe that in the hands of faithful teachers the new system is far superior to the old, as its aim is to cultivate the reasoning faculties; but its success will depend on the faithfulness of the teacher, as any attempt on his or her part towards cramming or verbatim recitations, or teaching of rules, will be a failure. Again, it is founded on the inductive method."

Partly as a result of these investigations, and partly as a result of efforts made by members of the board of education and others, much improvement has been accomplished; and I am told seventeen hundred schools have been changed with reference to this matter. Still faults remain, and in my own personal investigations I found some of these. In one of the schools in the lower part of the city I found the children in two of the lowest grades of the primary divisions were sitting in perpetual twilight. It was impossible for those on the inner form to use the eyes without injury. The teachers told me that on days at all dark it was necessary to light the gas. This is sufficient to indicate that there are still some drawbacks of this kind. I found some other schools in which this same condition existed, but not to so marked an extent.

In spite of the improvement made, the ventilation of the schools of Philadelphia is still very bad. Some of the newer schools, built within recent years, are furnished with improved methods of ventilation, but even in some of these the methods do not work well. In the majority of the schools there is no special system of ventilation—only the ordinary window method—and even in connection with the windows no special apparatus. In the boys' high school the ventilation is by means of windows, and I discovered a great difference between the temperature of the rooms and that of the halls. I found on one occasion over sixty boys crowded into one room of this school, a room that had not seating capacity for more than forty, and should have accommodated only thirty.

With the assistance of Dr. M. H. Bochroch and Dr. E. J. McOscar, temperatures were taken in a number of the schools. While they were not very high, they were almost uniformly a few degrees higher than they should have been. The mere question of the state of the thermometer is not all in the discussion of questions of this kind. In many schools we found the temperature ranging about 74 degrees; in others 75; in others 76; the temperature as a rule ranged from 70 up to 75 or 76, but more commonly up to 73 or 74.

One great defect in the public schools of this city is in connection with the opportunity for exercise which is provided for the children. In some of the largest schools, in the best sections, the children have absolutely no place to engage in healthful physical exercise. In one of these large schools in which the number of pupils is perhaps 1,000, there is only a small side yard which is used chiefly by the girls, the boys having no place for exercise. Of course, much of this cannot be helped; still parents, teachers, and all good citizens should look out for the future. In many cases where no other opportunity can be afforded for exercise, the cellars and basements might be fitted up for this purpose. There is no inducement for children to make use of the recesses unless they have the opportunity and place to exercise. This I believe is one of the causes, with other hygienic deficiencies, of much of the ill health which has been reported.

I cannot go into the subject of drainage and sewerage, but in two or three of the schools a shocking state of affairs was found. In the Sargent Street Girls' Grammar School, where, by the way, the teachers meet weekly to discuss health and educational matters in a certain room, the atmosphere was simply mephitic. Certain glaring defects existed in the sewerage arrangements and the position of this room to the water-closet.

A sound nervous system is undoubtedly a most important factor, so far as an individual's capability of education is concerned. A good education will do more than anything else to develop and strengthen the nervous system. The lay ideas of mind are peculiar and warped, and in this fact is to be found one of the faults in dealing with the question of education. It is forgotten by educators, and those who control and govern educators, politically or otherwise, that the equal and even development of every part of the human body is essential to the perfection of the nervous system. In one of the lectures to teachers at the board of education rooms, I heard repeated the old expression that the special senses are the gateways of the mind. This is true; but they are more than this; they are an essential part of the mental apparatus itself. Many years ago Gall and Spurzheim gave us a phrenology which was first received with skepticism, then believed in by multitudes, and finally hooted at by all but a few. Their peculiar views have properly enough gone by the board, but the germ of a great truth was in this old phrenological science, and by better

methods in abler hands this has been developed in recent years into the great doctrine of brain localization.

When the hand is used for any delicate work, when the arm is employed in striking or pulling, when the foot and leg do their part in dancing or walking, when the eye gazes upon a landscape or takes in the contents of the page, when the ear is tuned to music or to discordant sounds, when the sense of touch is exercised, certain special regions of the brain re-act in consequence of the peculiar peripheral impressions which are made. The resultant of these re-actions, combined with the processes of attention, memory, association, judgment, etc., constitute that great something which you choose to call mind. The leg, the arm, the eye, the skin, each has its mental response so far as its physical activity is concerned.

Without going into any metaphysical discussion as to what mind is, no doubt can exist that the nervous system, and particularly the brain, is its chief organ. In this sense the mind is the result of the harmonious working together of all parts of the brain, and all parts of the brain are connected, more or less directly, with all parts and organs of the body. Mind is not a little something located in a small portion of the encephalon—in some little gland, or minute bone cavity.

It may be laid down as a general proposition that overwork, physical or mental, is capable, directly or indirectly, of producing the most serious disorders of the nervous system and mind. Mental overwork differs from physical overwork in essence simply in the fact that different or larger cerebral areas are concerned in the production of the effects of effort. It is only on special occasions, if at all, when higher intellection, pure and simple, is going on, that the regions of motion and sensation are not concerned in the production of what appears as the mental output in a given case. Indeed, in this great fact that physical activities, normal or abnormal, specific and definite, so far as certain acts are concerned, accompany higher mental activity, and that the brain is detrimentally acted upon in a two-fold manner, resides the explanation of some of the worst evils of so-called mental overwork. It is mental overwork and the physical and emotional strain which go with it, that lead to the dire result.

The influence of overwork in the production of nervous diseases and insanity is, on the one hand, sometimes overrated, and, on the other, frequently overlooked. It has always been a favorite subject with tyros in medicine and social science, but it is one which requires large practical experience and wide knowledge of disease in order that it may be copied with properly.

A good way to lead up to an understanding of the disastrous effects of mental overwork upon the mind and nervous system is by first considering those tangible and easily recognized nervous affections which are the result of special forms of physical overwork. Such a consideration will show that between the effects of physical and mental over-

work the difference is apparent rather than real. It is a common experience to observe certain physical effects, such as general exhaustion, tremor, temporary paresis, and, more rarely, forms of spasm, result from physical over-effort. George Vivian Poore,\* and others, have well designated certain affections as "fatigue diseases." These disorders are those which have been described under various names, such as the cramp, spasm, or palsy of writers, pianists, telegraphers, type-writers, blacksmiths, tailors, milkers, weavers, etc., and are also sometimes considered under the general designation of "artisans' diseases." What is the clinical history of such cases? How do they arise, and how progress? In general terms, they are the result of interference with that "rhythmic nutrition" which Sir James Paget has declared to be one of the great laws of nature, a law the violation of which entails pain, disease and, it may be, death. It is not work, physical or mental, which leads to these dire results, but overwork, in the strictest sense of the term. Work, within normal limits, leads to normal fatigue, which, in its turn, calls for rest, in order that recuperation may occur; overwork leads to abnormal fatigue, and, at its worst, destroys even the inclination to that repose which helps to carry out this great law of rhythmic nutrition.

In these fatigue disorders it is the monotonous, everlasting repetition of the same forms and processes of work which brings about the ill results. Not only are the muscles and nerves concerned in such apparently simple, but really complicated physiological acts as writing, telegraphing and the like, exhausted beyond recuperation, but the nerve centers, spinal and cerebral, which control and harmonize these acts, are themselves eventually exhausted, and, if the cause continues, they may be destroyed. The evident conditions in these cases, what the doctor calls the "symptoms," are the pain, the cramp or spasm, the tremor, the paresis, the incoördinate movements, the flag in attention, and the undue emotionality, which are seen to be present, or of which the patients complain. The hidden condition in these cases, what the doctor calls the "pathology," is the change, impalpable and not yet demonstrable it may be, of the peripheral and central neuromuscular apparatus which has been brought about by its over use. The weight of recent opinion is undoubtedly in favor of the view that the seat of the greatest pathological change in these cases is in the central nervous system; doubtless in some of them it is in the gray matter of the brain cortex.

Over-physical fatigue of muscle, of eye, ear, tactile papilla, etc., then, means exhaustion of nerve centers, spinal and cerebral as well. One of the clearest truths of modern cerebral physiology, one of the most widely known results of investigation into cerebral localization, bears out this truth. Every isolated muscular action, every action the re-

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\* Electricity in Medicine and Surgery.

sult of the movement of a group of muscles, has its record in the cerebral cortex: each muscle or muscular group has there its center or governing spot. The brain acts in levels, in areas, in zones, in centers, or there is no truth in the now multitudinous observations and experiments which go to prove the doctrine of localization. Motor and sensory localization at least may be regarded as established. Differences of opinion may exist, and will probably continue to exist, as to the exact nature of this localization—whether in the brain we have a mere loosely linked confederation, or whether these localizations are simply centralizations of certain vibrations, etc.—but no doubt can remain as to the truth of some method of localization. Certain areas of the brain are destroyed, and certain muscles are palsied and eventually degenerate; a limb is amputated, or its power or size destroyed by a spinal or peripheral disease, and years after certain brain centers are found wasted or obliterated. A man like Gambetta, distinguished for mental grasp and particularly for eloquence and fluent speech, is found with a certain convolution doubly developed. Excessive muscular action is shown by Lombard, Amidon and others to result in increase of local temperature in certain regions of the cranial vault. From both aspects of the question is demonstrated the possibility of central nervous effects from peripheral causes.

In a case which recently came under my observation, through the kindness of a brother practitioner, the fact that even higher volitional centers may be demonstrably exhausted by over exertion was beautifully illustrated. The man was a singer and actor in a popular troupe. In order better to counterfeit the character which it was his duty to represent on the boards, he was in the habit nightly, for many minutes at a time, of frightfully contorting his face and eyes, accomplishing a strikingly effective artistic feat. Both eyes were made to strongly converge, the forehead at the same time was corrugated, and the muscles of the cheek were drawn into special positions. One day he suddenly saw double. His double vision persisted and became more annoying, and it was soon discovered that he had paresis of the external muscle of one eye, some pain accompanying the trouble. That the condition was really due to exhaustion of cerebral centers appeared to be demonstrated by the fact that he could, by great effort, for a moment or two cause the affected eye to rotate outwards beyond the medium line, although ordinarily it this could not be done.

At first sight these considerations and illustrations may seem to have little to do with the question of mental overwork and its consequences; but such is not the case. It is in consideration of facts of this kind that the true philosophy of neurasthenia or the philosophy of a true neurasthenia becomes evident. If motor activities are governed by definite cerebral centers, which can be exhausted, and whose nutrition can permanently be arrested or impaired, mental activity, abnormally exerted, can certainly lead to impairment of cerebral

centers. Physical overwork means cerebation, as well as mental overwork—both have their brain reaction.

Not a few of the organic spinal affections which pass under the name of sclerosis are produced or determined by over-physical exertion. Even when syphilis, alcohol or sexual abuses have played a part, sometimes physical overwork has been the last factor in the production of the diseases. During or succeeding some great military campaigns many spinal disorders have resulted, because of the extraordinary fatigue of long marches and unusual exertion. A number of cases of locomotor ataxia, not due to syphilis, alcohol or exposure, occurred among soldiers on both sides during our late civil war. It is well known to electro-physiologists and electro-therapeutists that a muscle can be faradized or galvanized, until both it and its nervous centers are so thoroughly exhausted that almost total paralysis occurs. That cerebral centers for the special senses can be exhausted by over-use of the organs of special sense, has been shown by numerous clinical facts.

Let me say a few special words to those adults who are overworking themselves almost daily, often both unconsciously and unnecessarily. In the first place, while it may seem almost absurd to repeat the trite dictum that they should do less work, this is really the first truth to be learned.

Individuals are often forced into such positions that they cannot, at given times, do less than the amount of work that is called for in a certain number of hours, but it is the prophylaxis of overwork that should receive their careful thought. They should not push the ox into the ditch, in order to compel themselves to pull it out on Sunday; they should provide from day to day, from week to week, and even from season to season, against the possibility of being thrown into positions where temporary overwork becomes absolutely necessary. Their work should be more carefully anticipated. I know well that different vocations in life will make great differences as to the possibility of more or less absolute systematization, but something can be done in this respect, even by those who belong to the most taxing and irregular of professions.

An important practical point—one too often overlooked by over-worked men—is the great value of brief intervals of repose during working hours. These can often be had, even by those who think it least possible. The recumbent position, with the general physical and sometimes mental relaxation which it brings, even without sleep, often serves to knit together again the tired faculties. Where the habit of snatching these intervals of sleep can be acquired it is of very great benefit. It would be far better for those who are over-worked to resort to these methods of recuperation rather than to stimulants. Stimulants are always a dangerous ally when resorted to during the progress of crowding tasks.

Those who are forced to do much work in a short time should learn to avail themselves of all possible auxiliaries to lighten labor and save time. The day has gone by when the busy statesman, or novelist, or lawyer, or physician, can afford to spend tedious hours in doing the mechanical work of writing speeches, novels, opinions, or professional experience. Stenographers and type-writers have become invaluable and indispensable auxiliaries to men of many labors. A word of caution is here necessary, however; there is a possible danger that with these auxiliaries which make the achievements within reach much greater, the ambitious, hard-worked individual will set to himself far greater tasks than he would under other circumstances.

Some system of medical superintendence in our public schools should be adopted. Much good could undoubtedly be accomplished in this way. In some foreign cities, and possibly in some municipalities in this country, systematic medical inspection and superintendency of schools has been adopted. Crichton-Browne has recommended such superintendence of the London schools in consequence of the personal investigation which he made into a number of the elementary schools of London. It is not necessary that there should be a cumbrous and costly system of medical inspection and superintendency. In connection with the general superintendency of our schools, one or more medical men might be employed to systematically inspect and report upon the sanitary condition of school buildings and surroundings, and upon the health of the pupils. It may be a question as to how such positions should be filled, or in connection with what department of city government they should be held. Some might consider it best to have such medical superintendence in connection with the municipal board of health, but as our city departments are at present constituted it would probably be better for the medical superintendents or inspectors to hold the position of assistant superintendents, or, at least, a position of similar rank under the school department.

With a thorough system of medical superintendence of the public schools in active operation, the most serious evils in school life and in work might be avoided or remedied. Such questions as ventilation, lighting, seating, drainage, vaccination, the presence of children in whose families contagious diseases prevail, would come under the jurisdiction of such medical inspector or superintendent. Special investigations could also be made or directed, from time to time, with reference to the number of studies, hours of home work, amount of recreation and sleep, and the effect of all these upon the health of children in certain schools or districts. Reports upon these matters could thus be systematically made to the superintendent of the public schools.

Not only could much be done for the avoidance of disease and im-

provement of the health of school children by a well-directed medical superintendency, but much information of the greatest scientific value could be obtained, and put into shape for general usefulness, by a system of health registers in schools. Such a register, says Crichton-Browne, who strongly recommends it, could be so arranged as to supply a clear and complete history of the vital and educational progress of each pupil as long as he or she remains in school. "But more valuable and trustworthy than even a medical report," says this writer, "would be a register of height, weight, head and chest girth of the children were such a record kept in every school. A log-book of this kind would help us much in doing justice to the teachers and children alike and in putting a stop to over-pressure. At present the only basis of classification of school children recognized is the age difference, no allowance being made for health or development or radical differences. But no one can walk through a few schools in different districts of London, and with different rates of payment, without being impressed with the wide interval of health and development that separates children in the best from those in the worst. The latter are puny, dwarfish, pale and feeble when compared with the former; and to judge a teacher who is laboring amongst them by the same standard that is applied to another whose lot is cast amongst larger-limbed and larger-headed children, with richer blood and more constitutional vigor, is to do him a manifest injustice and incite to over-pressure. But injustice of this kind would vanish at the appearance of the tape measure, for the average height and weight and head and chest circumference of the children would supply just the check which is required on the results of examination."

If school children are overworked, it may be to some extent the fault of their parents. The parents should look more to the school interests of their children. I recently asked the principal of a grammar school whether the parents visited the school. He replied, "Oh, they visit the school; at least some of them do." "When do they visit the school?" I inquired. "They usually visit the school just after examination week, to see why John or Mary has not been promoted. They make the teacher's life miserable for some time after examinations; but they seldom visit him at any other season."

For certain special health matters, parents are largely responsible. I am credibly informed that a large number of the pupils of the girl's normal school are found in their places each morning without having had any breakfast. It stands to reason that a child will suffer from nervousness, headache, eye strain, etc.—ills which come from a run-down state of the system—if such a state of affairs is allowed. A diet of doughnuts is not the best for either mental or physical development; but I can affirm without fear of contradiction that in the girl's normal school of Philadelphia doughnuts are the most popular lunch-  
eaten in the intervals between the different sessions. When I was a



boy a diet of cheese cakes was the favorite; but as I had plenty of active exercise in my journey of four miles to and from my home, I did not suffer as much as I otherwise should have done. Parents should know what their children eat at school as well as at home. Arrangements should be made in the schools in which long hours prevail by which the children can break their fasts with healthful food during the day.

Parents should see to it that their girls are not driven too hard during the menstrual periods. They should take care that both boys and girls should not study too hard at certain diurnal periods—for instance, immediately before bedtime. It is well known that hard study immediately before retiring to rest will do much towards injuring the health and preventing sleep. Great mental application, continued until too near the time of retiring, or beyond the usual hour, keeps the blood within the head at the time when it should leave it.

The parents of the pupils constitute the great people, politically, of Philadelphia, and these parents should arise in their might and uphold those who are using their strongest and noblest efforts to promote the interests of our school system. They should arise and protest against bad school buildings and insufficient appropriations for educational purposes; they should see to it that those faults which could be remedied with money are removed.

Many teachers are overworked. I believe also that they are underpaid. The real overwork in the case of many of the teachers and the real injury to health seems to me to be due rather to the methods of working than to the actual amount of ground that is covered. Ill health of teachers is also due to sanitary defects. Teachers are compelled to live from nine o'clock in the morning till four o'clock in the afternoon, nearly all the time in ill-ventilated rooms. They are compelled in some cases to pursue certain methods of teaching which are unnatural, or for which they are untrained. They are bound to suffer sooner or later. Of the graded schools the complaint has been made to me that the work is harder for the teachers than under the old system. I have taken care to observe the methods of teaching in a number of schools in different sections working under the new system. Different schools differ very much. I believe that the supposed overwork from the new method of teaching is due in many cases to the fact that the teachers have not yet accustomed themselves to the new method.

**XI. The Necessity of Physical Education.**

By **CARL H. HORSCH, M. D.**, of *Dover, N. H.*, member *State Board of Health of New Hampshire.*

The ancient Egyptians and Persians had their physical training and athletic sports, which are described by Diodorus, Herodotus, Strabo and other writers, but the first systematic physical education as a necessity of popular culture was practiced by the Greeks; they had gymnasiums and better regulated athletic social sports, yet Euripides spoke

**1. ABDUCTION.**

of Grecian professional athletes as being useless and injurious members of society.

Later, we find a still better development of physical training among the Dorians and the Spartans. Xenophon called the Spartans the healthiest of all the Greeks.

Martin Luther and other reformers advocated gymnastic and physical education, and later advocates were Rousseau in France, Jahn the father of German Turners, Clais in Switzerland, Nachtigall in Den-

mark, Ling in Sweden, Maclaren in England, Beck, Folen, Dio Lewis and others in America.

In 1849 a law was passed in Switzerland to make calisthenics and gymnastics obligatory in educational institutions. All who have this important sanitary measure at heart hope and wish that this country may follow that example; because mental and physical culture are the most necessary conditions for the maintenance and propagation of republican principles, and for a vigorous, prosperous, free nation.

Rightly applied, physical exercise is a very important aid to circulation and mixing of our blood, digestion and assimilation of the food, growth, production and reproduction of the system.



2. ADDUCTION.

Breathing is accelerated by rational bodily exercise, and a more appropriate exchange of oxygen, carbonic acid and water secured.

The heart beats more forcibly and frequently, and the blood and its nourishing constituents are better distributed. Digestion and the appetite are improved on account of increased absorption, waste and greater demand for food. The tone of the nervous system is also improved.

Gaskel and Moose have demonstrated and proved by experiments, that the flow of blood is increased during the period of contraction of the muscular fibres.

Dr. Edward Smith\* has made experiments regarding the effect of exercise on the respiration; he gives the relative quantities of air inspired during various forms of muscular exertion, the amount inspired in the recumbent position at rest being taken as unity in one table, in a second table the pulmonary elimination of carbonic acid during exercise, as compared with rest.

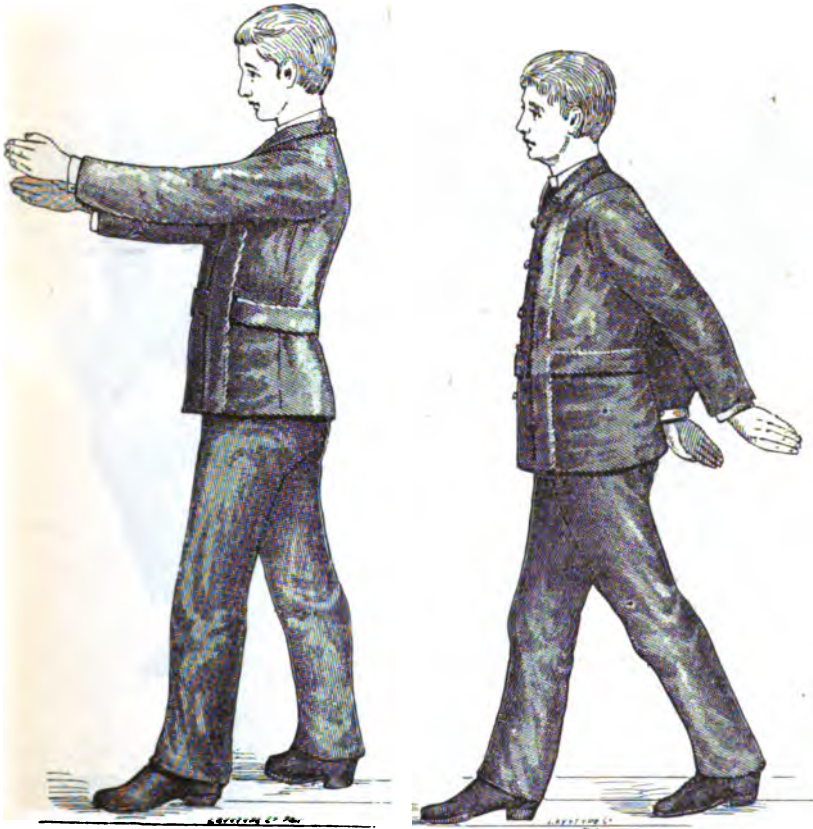
Pettenkofer and Voit made experiments "upon the elimination of carbonic acid and absorption of oxygen during rest and exercise;" by the aid of an apparatus they give with a higher degree of accuracy than was attainable by Smith's method, the average

elimination of carbonic acid and absorption of oxygen in grains. Other scientific observations have been made by Liebig, Wislicenus, Helmholtz, Flint and others.

Beneficial kinds of exercises are :

\* Physical exercise by A. Brayton Ball, M. D., supplement volume on hygiene and public health. Ziemssen's Cyclopaedia.

1. Exercise out of doors, which secures the advantage of better air, change of atmospheric pressure, and more light.
2. Exercise out of town, where the air is purer than in thickly settled places.
3. Calisthenic free exercises, by which we use all the voluntary muscles.
4. Vocal gymnastics, whereby the respiratory organs, organs of speech and voice are improved.
5. Hellenic, Swedish gymnastics, turning, and training for rowing, aim at forced muscular contractions, for which there are various ap-



3. ATTRACTION.

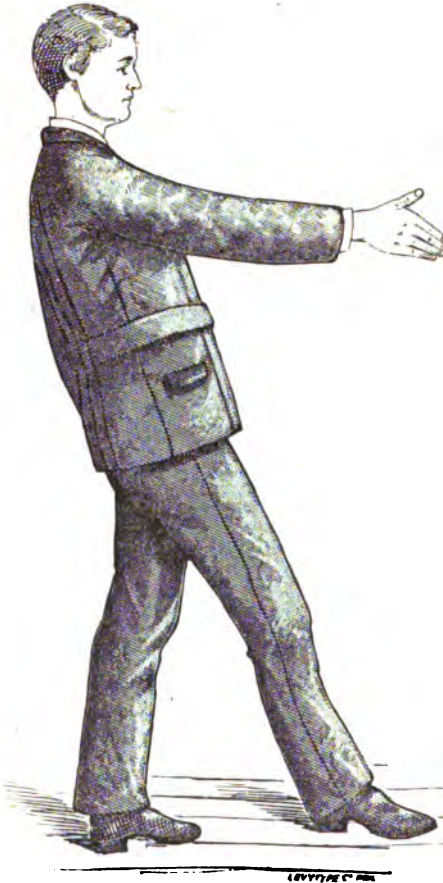
4. RETRACTION.

paratus, and whereby the nutrition of the muscles is promoted. It is also necessary to balance our body right. Tissot in France, and Ling in Sweden, established gymnastic exercises for the treatment of certain diseases.

The voluntary muscles classified by their actions are :

1. Abductor muscles, whereby the extremities are drawn from the middle line of the body.

2. Adductor muscles, which carry the limbs to the middle line of the body.
3. Attraction muscles, whereby we move the parts forward.
4. Retraction muscles, move the parts backward.
5. Extensor muscles, stretch the body and extremities.
6. Flexor muscles, bend the body and limbs.
7. Rotator muscles, turn the parts on their axis.
8. Pronator muscles, turn the parts forward and inward.
9. Supinator muscles turn backward and outward.



5. EXTENSION.



6. FLEXION.

10. Depressor muscles, draw the lips, side of the nose and angle of the mouth down.

11. Levator muscles, lift and raise the parts, as eyelids and lips. The two latter and the sphincter and constrictor muscles are not as much under our command as the other nine kinds of muscles.

Permit me to call the actions of the voluntary muscles the alphabet to a more rational systematic and beneficial exercise of our body.



Without the knowledge of these actions calisthenics and gymnastics remain to a greater extent automatical. The necessity of physical education will certainly be better comprehended and valued when we teach fundamental principles. Erasmus Wilson said: "In mind lies the great secret of beneficial exercise, and without it exercise is a misnomer, and a fraud on the constitution."

There are already a number of educational institutions where physical exercises are practiced, and also gymnastic institutions and athletic clubs, the German Turner Vereins and the American Turner Bund; but if intelligently directed rythmically executed physical



#### 7. ROTATION.

exercise is required in every college, and properly arranged places and apparatus for calisthenics and gymnastics are in every school house, then the teachers and scholars can improve their physical conditions and have systematic means for a more useful and symmetrical development of their bodies.

Anthropometric apparatus, by which we can determine breathing power, strength of pull, squeeze, quickness of blow, and other personal

data, would be well for annual examinations, and give an impulse for better attention to physical education. When I visited the "International Health Exhibition" in London, in 1884, there were hundreds of persons waiting for a chance at the entrance of the "Anthropometric Laboratory," to be admitted and examined.

The laboratory was arranged by Francis Galton, F. R. S.; he had the following apparatus :

1. For eyesight : (a) its keenness ; (b) the color sense ; (c) judgment of the eye in estimating length and squareness.
2. Hearing : (a) its keenness ; (b) highest audible note.



3. Touch (exhibition of various instruments).
4. Breathing capacity ; his spirometer was used.
5. Strength : (a) of pull ; (b) of squeeze with right and with left hand.
6. Swiftmess of blow with fist.
7. Span of the arms.
8. Heights : (a) when sitting ; (b) standing.

If we consider that attention to the various sanitary measures is an imperative duty for all cultured people, and that a better physical

development is needed, we hope that they will adopt the recommendations of the Boards of Health, American Public Health Association, and of the present Sanitary Convention.

All intelligent just persons will acknowledge that the efforts made by such sanitary institutions are unselfish and for the welfare of humanity.



EXTENSION.

I think to stretch the body, the right arm and leg, then the left arm and leg is better.

If we commence with the here illustrated motions, we are sure that we have brought the voluntary muscles, which can be entirely controlled by our will, into rational, systematic, physiological actions, and have them better prepared for daily labor, forced muscular exercises, as gymnastics, boat rowing, etc., for a better balance of our body, and a development of agility and vigor.

The following illustrated exercises should be made at least three times a day and every motion three times, which can be executed in about two minutes. There are many vocations where persons use and even overtax some of their voluntary muscles, but do not contract the



fibres of the other sets of muscles, whereas circulation of the blood and all functions need that physiological action.

1. Use the abductor muscles by spreading the extremities and move them from the middle line of the body.

2. The adductor muscles are well used by drawing the limbs as close as possible to the middle line of the body; you can do it after each abduction, but it is better to draw the limbs close to the body by separate motions, and when the extremities are about one inch from the body.

3. Attraction muscles are used by making a step forward, and every step throwing the arms forward.

4. Retraction muscles by stepping backward, and with each step throwing the arms backward.

5. Use the extensor muscles by stretching the body, the right arm and leg, then the left arm and leg.

6. The flexor muscles, by bending body, neck, right arm and leg, then left arm and leg.

7. Rotation muscles by turning the head as much as possible to the right and then to the left, and turn the arms and then the legs on their axis.

8. The actions of the pronator and supinator muscles are illustrated on one figure; you find the right hand pronated and the left supinated; first exercise hand and wrist, then feet and ankles.

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## **XII. Heating and Ventilation of Public School Buildings, as Illustrated by the System introduced into the New High School Building at Chester.**

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By D. W. JEFFERIS, M. D., of *Chester, Pa.*

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There have been in recent years great advances in the construction and arrangement of public school buildings. We now recognize the fact that the eyes of our children may be permanently injured by insufficient light or light from wrong directions. The furniture is now graded to the size of the pupils "whose feet no longer hang down, anxious in vain to reach the distant floor."

It is pretty well understood that the location should be healthful, and the grounds ample for exercise. But I doubt if in the great majority of cases our heating and ventilation is in any way better than it was in the days of the ten-plate stove and wood fires of our forefathers.

It is true that many efforts have been made at improvement, so that we find in the different school rooms stoves, hot air furnaces, and steam-heating apparatus, with direct and indirect radiation. Stoves are objectionable because the room is heated unevenly. The pupils

near them suffer from excessive heat, while those in distant parts of the room suffer from cold.

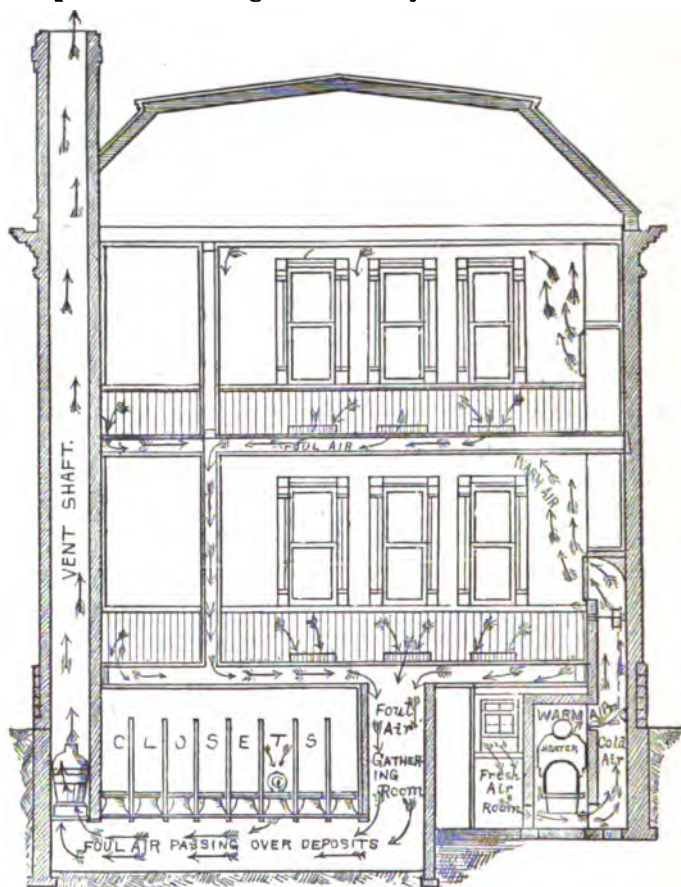
Hot-air furnaces are objectionable because the air is dry and superheated, and the burnt organic materials contained in it act as irritants. Indirect steam heating is perhaps the best of the three, and if the radiators are large enough and the warmed air can reach the rooms in sufficient quantities, leave perhaps but little to be desired, provided proper arrangements could be made to get rid of the air when it becomes contaminated. Still it has never been my good fortune to see a school room where these conditions were complied with, direct heat from radiators in the room being also required to keep it to the proper temperature. A good system of steam heating is necessarily expensive in construction, fuel and repairs, so that boards of education generally are compelled to accept plans which either fail in heat or ventilation, and most often in both.

So the air in our school rooms is impure and unfit for respiration. The teachers and pupils are alike dull, and all complain of cold feet and headaches. The school life, which normally should be bright, pleasant and healthy, is a time of weariness and languor. In it too often are sown the seeds of decay and death.

The careful teacher, instructed as required by our legislators in anatomy, physiology and hygiene, recognizes the necessity for pure air, and ventilates by raising the windows or lowering them from the top, the popular fancy being that bad air ascends. Thus she creates injurious drafts, and by choosing a lesser evil sacrifices the few children who sit near for the benefit of the many in distant and more sheltered parts of the room. So it was a serious question with the building committee of our board whether it would not be as well to make no provision for ventilation, lest our teachers should put undue reliance upon it, and neglect the old and obvious way. If any one, unacquainted with the subject, doubts the assertion that, as a rule, school rooms are not well ventilated, let him spend one day in school visitation; he will then find abundant evidence. It will not be necessary to use instruments of precision, or make chemical analyses to calculate to a nicety the amount of deleterious substances in each cubic foot of air; on the contrary, his sense of smell will at once warn him of danger if he remains long in the contaminated atmosphere. Our new high-school building will contain in round numbers 100,000 cubic feet of air in the different rooms. It will accommodate 400 pupils. As each person will contaminate ten cubic feet of air every minute, which is a sufficiently low estimate for health and high intellectual activity, it will be seen that in twenty-five minutes all the air in the building will be impure, and should be replaced by fresh air; this, in our climate in the winter season, should be warmed air. No arrangement with which I am acquainted, either by stoves, hot-air

furnaces, or steam-heating apparatus, will warm sufficient air to effect this. If we cannot take into our high-school building more than 200,000 feet of air every hour, there is insufficient ventilation; for foul air will remain in the rooms until it is replaced by fresh air.

While investigating the subject our attention was called to the system which we have after full inquiry and examination of buildings in which it was in use, adopted, satisfied that it will fill all our requirements and accomplish all that is guaranteed by the builders—that is, change



**SMEAD'S SYSTEM of DRY CLOSETS** Pat. 1685.

the air in all the rooms at least three times an hour and keep them at a temperature of 70° in the coldest weather, at a less cost than by stoves, hot-air furnaces or steam-heating apparatus. To warm this large body of air they will place in our basement four large heaters, or more properly air warmers (see cut). These are built of heavy iron so as to be durable, are patterned after the locomotive boiler—tubular—and hence furnish a large radiating surface—260 feet in each furnace—and retain the heat of the burning fuel as long as possible. To them the outside air is freely admitted; being warmed to a tem-

perature of about 125°, it rises through brick flues to the school rooms above, entering the rooms through ample registers; by a simple arrangement, the teacher can by moving a hand upon a dial regulate its admission, either mixing it with cold air, or shutting off the supply of warm air altogether, admit only cold air; but she cannot lessen the quantity of air coming into the room. Having entered the room it rises to the ceiling, forcing the contained air gradually downward, and out through the ventilators placed under each window. These vents are put under the windows for the reason that there is more or less downward movement of air in this position, as windows are never completely air-tight, and the air in contact with them is cooled from the outside. Going out of the body of the room the now contaminated air still at a temperature of from 60° to 65°, passes directly under the floor; it being laid upon furring strips to afford space for that purpose. This keeps the floor always dry and warm, which is in itself a very great advantage over other methods. In the basement there are foul air gathering rooms, from which the air passes to the ventilating flue built in the smoke stack. I trust I have made the system plain, and you will pardon me if I call your attention to another very important feature which we have adopted in connection with this system. Somebody has said that he could judge of the civilization of a people by the condition of their privies. If our school children are to be judged in this way their state is low indeed. These closets are the bane of all school officers, filthy and offensive alike to sight and smell. It has seemed impossible to better their condition. Between the foul air gathering rooms and the ventilating shafts we have placed our closets. Through each set of closets there will rush 150,000 cubic feet of dry, warm air every hour. This air having already accomplished the two-fold purposes of warming and ventilation in the rooms above, now is called to another office, and as it sweeps up the big chimney carries with it all the moisture and bad odor in the excreta, leaving behind it only a small quantity of inodorous material which burns readily, and may be actually burned in situ, or thrown into the furnace. No mal-odors can possibly reach the school rooms. During the summer months the free circulation of the air is secured by small furnaces built in the base of the stacks. Thus is obviated all necessity of raising the windows at any season. In winter there can be no drafts, and in summer comparative freedom from dust and noise.

Just as I had concluded this paper I received a letter dated May 5, 1886, from H. S. Jones, superintendent of public schools of Erie, Pa., from which I take this extract:

"We have our building No. 3, a six-teacher house, warmed and ventilated by the Ruttan system. The plan in brief is to have large quantities of warmed air (not hot) pass into the room and pass out under the floor, thence to the ventilating shaft or foul-air stack. The theory as outlined is a fact in No. 3 building. The air at no time dur-

ing the coldest days gave any indication of impurity, though no windows or so-called ventilators were used to let in fresh air. All air comes in through the heating chamber and passes out under the floors. Most of our other buildings are what are called well ventilated, but it was noticeable when a wave of influenza passed through the town that the pupils in No. 3 suffered much less than the others from illness, or that state of the mucous membrane of the nose that shows more or less congestion which leads to catarrh, etc. The floor at all times being warm made it especially pleasant to the younger pupils, as no windows are opened, no drafts are chilling pupils' heads and shoulders, causing earache, toothache and colds. Large amounts of warm air cost somewhat more in fuel than hot air, but nothing pays better in health, comfort and cheerfulness."

Allow me in conclusion to say that I have no interest whatever in any mode of heating, save that general interest which every medical man who is a school officer must take in the well-being of the children entrusted to his charge; and if it were necessary to choose among evils, I would prefer poor books, bad furniture and low-grade teachers, before poor ventilation. I trust, however, that in our new building we will avoid all these evils, and if you will come to Chester, will be glad to show you on any cold day next winter our success or failure.

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### XIII. Defective Vision in School Children.

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Mr. PRESIDENT: Absence from the city until two days ago prevented me from learning that I was selected to read a paper on the subject of "Defective Vision in School Children" before this convention. The time has been so short and my engagements so pressing that it was utterly impossible for me to prepare a full and proper paper on this very important subject for this occasion. I have, however, thrown a few ideas and suggestions together for the purpose of opening the discussion, to draw out the feelings and expressions of those present on the subject.

Up to 1863 the complaints of children in relation to defective vision were made but light of. When complaining of headache, pain in the eyes, sleepiness on study and inability to see the blackboard or study their lessons, it was taken as an excuse for laziness, inattention, or some form of disordered stomach or liver. The anomalies and defects of refraction of the eye were not known or really in their early beginning of discovery and development. Until the discovery of the ophthalmoscope in 1351 by Helmholtz, the fundus of the eye was as

unknown and impenetrable as some of the thick jungles of Africa. Everything in relation to the inward eye was but supposition; but after the discovery and development of this famous little instrument, a new world was opened to us, and one of the most brilliant and beautiful pictures of nature was revealed. In a short time the study of the parts contained in the eyeball, such as the normal anatomy and then the morbid changes found in diseases of that organ were made, and then the normal and abnormal refraction were discovered. This led to the more perfect study of the defects in vision when the fundus appeared normal and there was no disease apparent about the external eye. Professor V. Graefe, of Berlin, did so much in the detection and classification of the diseases of the inner eye; while Professor Donders, of Utrecht, Holland, worked out and classified the anomalies of refraction, and published his great work on the subject in 1863. Since then the examination of all classes of people as well as school children, has been undertaken by ophthalmologists of all lands and countries; and from their experience, it has been found that these complaints of children when in school or studying have been and are well founded.

These defects are brought more prominently to our view for the reason that the number of children increases as the population augments, and the schools become more frequented, by the compulsory laws on education in the land.

The defects of refraction being more or less congenital, show naturally in the early years of school life, when the eyes are used to accommodate for some length of time at close work in study.

The defect of vision in the eye causing the troubles are divided into two classes, viz: Hypermetropia, or too short an axis, from the ball being too flat anteriorly-posteriorly; and myopia, or too long an axis, from the ball being too long anteriorly-posteriorly. Astigmatism is part of one or both of the above in a special axis; and it may be combined with either in the same eye.

The causes, then, of defective vision in children are, laying aside any congenital defects in the media or tunics of the eye or inflammation of the same, a more or less irregularity in the shape or rotundity of the ball.

Hypermetropia causes great strain upon the accommodation in the act of concentrating the vision in study, and may create varied troubles; pain in the head, in the eye itself, inflammation of the conjunctiva, and of the edges of the lids, and various curious reflex irritations. Careful and proper correction of the defect in refraction by glasses removes the cause of these troubles, and they can often be readily and entirely banished.

*Myopia*, near-sightedness, is of a more serious character. Here we are more liable to have severe and insidious inflammatory action in the tunics of the eye—the retina, choroid and sclerotic. This form of

defect is more apt to be acquired than congenital; and if congenital, is increased by improper use and strain of the eyes. All myopic eyes are more or less diseased, that is, weak and liable to inflammatory action; and this inflammation to be at the fundus of the eye-ball, in the choroid and its neighboring tunics. By this inflammatory action the tissues become softened and from the intra-ocular tension gradually give way backward, and thus elongate the visual line so that the focus does not reach to the retina, and the near-sightedness becomes increased.

The causes of this inflammatory action and increase of myopia are many and various; reading in a bad light, whether in dimly-lighted rooms or at twilight when the clear light of the sun has passed away; reading lying down is injurious. Desks too low, so that the child acquires the habit of stooping over or lolling on the desk, are bad. All these cause the eyes to be brought too near the object, requiring too great convergence of the eyes in use, creating strain, congestion and inflammation. The head being thrown too much forward gives the tendency of an increased flow of blood to the eyes and thus over-filling of the vessels.

To remove all these causes is of the greatest necessity, and the school houses should be better lighted. The windows should be larger to admit more light as well as air, and not sacrificed for the whim and style of architectural beauty of the architect. In other words, the light necessary to be admitted into the rooms should be the first object in building school houses, and not the architectural beauty. The windows should have shades rising from the window sill, or inside shutters so arranged as to exclude the bright light from the seats near the windows, and not interfere with its passing over into the deeper parts of the room. By this arrangement a better equalization of the light in the room can be obtained.

As the classes are arranged by mental capacity and learning, and not the bodily size of the children, the desks should be made to raise and lower, so that the scholars can be made to sit erectly in front of them. The seats may also be thus made so as to make a comfortable and convenient position for the lower limbs while sitting at the desks.

Another cause of irritation to the eyes is the use of glossy paper in the books. The glare created thereby is very unpleasant, and at times blinding. All books should be of clear, well defined type, black ink, on a plain dull surfaced paper. This has been found the best and most serviceable. Tinted papers do not answer so well. They are more expensive, and where there is a natural weakness of sight (amblyopia) the definition of the letters and figures is not sharp enough for such vision.

A general as well as serious habit in children is that of holding the book very close to the eyes, with the idea that they can comprehend the letters, words and meaning better. This should be guarded against.

I have noticed this to be very general in small children, and it should be carefully watched and corrected, as the strain upon the organs of vision in this way often engenders the first seeds of many of the inflammatory troubles in the fundus of the eye, and causes serious near-sightedness.

Irregularity of vision or astigmatism is found mostly in the shape of the cornea, so that the rays of light passing through that part into the eye are not equally refracted. This is mostly of a congenital form, and should be corrected by the appropriate cylindrical glasses.

Defective vision is also caused by opacities in the cornea, remaining from some form of inflammation or ulceration. In many cases this may be relieved or removed by the proper medical or surgical treatment while the subject is still young.

The proper seating of pupils in relation to the light should be arranged. Up to within a few years the teacher was seated between the windows, with the blackboard behind her, and the desks so placed that the pupils faced the light of the open windows. This is a very injurious position; the light falling directly in front of their eyes, and at the same time shading the blackboard, requires strain to decipher the figures or writing thereon. The light should come in from the side over the shoulder. The left one is the better, as it falls clearly upon the books and slate without any shade from either hand or pencil.

Defect of color perception hardly comes into the discussion at this time, but it is well that children should be educated in the detection of all shades of color while young. There are cases of congenital defects which cannot be remedied, while there are others of a dullness in perception which can be brightened up by careful and proper education.

All these suggestions are of such great necessity to protect the vision of our children, that I think the State Board of Health should have the supervision of the building and furnishing of all school houses, as well as the inspection of the same and the pupils during the seasons of study.

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#### **XIX. An Epidemic of Diphtheria Traced to Its Source.**

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Every opportunity for tracing an outbreak of preventable disease to its presumably preventable cause is precious to the sanitarian. It speaks more loudly than mere words ever can to the public ear, which he desires to impress.



Such an opportunity, most striking in its character, has occurred in this State during the past year with reference to that wide spread and fatal zymotic, typhoid fever. I wish in this brief paper to parallel it with another which I had occasion to study some years since, and which is not less instructive because less recent, in regard to that equally prevalent and even more destructive contagion, diphtheria. Let me at the outset call attention to the difference in the mode of introduction of the poisons or germs of these two diseases into the human system. Of course no rule is without its exceptions, but it may be broadly stated that the typhoid germ is swallowed either in food or drink, oftenest in water, and flourishes and commits its most noticeable ravages in the digestive tract or alimentary canal; while the diphtheritic germ is inhaled, and flourishes and commits its ravages in the respiratory tract, the nostrils, fauces, larynx, windpipe and bronchial tubes.

I had the honor in the spring of 1878 to deliver the "Address in Hygiene," before the medical society of this State, in the city of Pittsburgh. That city had just been passing through a most mournful experience in an epidemic of the latter disease, and I felt that the occasion ought to be improved.

A better text from which to preach a sanitary sermon no hygienist could have desired. Following the hint of Shakespeare's sagacious observer who found "tongues in trees, sermons in stones, books in running brooks, and good in everything," it was an easy matter to read a homily from the four hundred little white headstones which marked four hundred new-made graves on the beautiful hillside above the bank of the rushing river, just outside the city; it required little imagination to hear the leaves whispering together in the night wind a sad requiem over those four hundred little mounds, green with the grass of their first summer; and no imagination whatever to perceive that beneath our feet, as we walked the streets of that busy town, were running, through tortuous subterranean courses, noxious streams, whose pestilential exhalations would prove, as they had proved, messages of death to many a household. The "good" which we were to look for here was to be found in a fresh opportunity to educate the public mind and quicken the official conscience in regard to the sin of filthiness.

The mind that can carefully peruse this plain recital and consider it in connection with the excellent map which Dr. Snively, the efficient registrar of vital statistics of that city, has been good enough to furnish me to illustrate it, and fail to be convinced that sewer air will cause diphtheria, could not comprehend the simplest proposition in mathematics.

The circumstances which give this epidemic its special importance as an educator and an illustration are its intensity, the rapidity of its

rise, its restricted localization, and the proved existence of insanitary local conditions together with unusual meteorological exciting causes.

Sanitarians are often perplexed in their efforts to follow up a chain of evidence by finding this or that link missing, which, although not needed to satisfy themselves, is essential to convince an unbeliever. In this case none are wanting.

The intensity of the outbreak may be appreciated when I say that the city of Philadelphia, with a population six times as large, has never had so many deaths from this disease within a corresponding space of time.

As to the rapidity of its rise, its mortality ran up from zero in June, to ninety-two in August, and two hundred and sixty-seven in October.

For such a startling increase in the prevalence of a single disease some remarkable cause must have existed. The board of health set itself to work to discover this cause, and if possible to counteract it. The thoroughness of their investigation might well be imitated in some larger centers of population, in which equally combustible elements are only awaiting the spark which shall kindle them into a wide-spread conflagration. "Except ye reform ye shall all likewise perish."

As to the local conditions, distribution of the disease, and exciting causes, I now gladly allow Dr. Snively to speak.

"During the seven months immediately preceding the outbreak," he says, "there were certified from widely-separated and remote parts of the city only 35 deaths from diphtheria, distributed according to season as follows:

"January, 9; February, 3; March, 4; April, 3; May, 5; June, 3, and July 8. These were distributed topographically as follows: East-end wards, 8; Old city wards, 12; South-side wards, 15. Of the 15 deaths which occurred upon the South-side, but four were located in what we may appropriately designate (in the light of subsequent events) as the *infected district*, viz: These portions of the Twenty-sixth, Twenty-seventh, Twenty-eighth and Twenty-ninth wards, located contiguous to, or drained by, the Washington street and the Twentieth street sewers. The record for the month of August shows 61 deaths, of which number 43 occurred in the infected district, while of the 465 deaths which occurred during the eight months from August 1, 1877, to April 1, 1878, 174 were located within the limits of the infected district.

"The territory to which I have applied this title is ninety acres in extent and triangular in shape, being bounded by Carson street, Twenty-first street and the base of the hill which rises abruptly to an average height of 450 feet above low water mark in the river. Carson street, which may be considered to represent the average level of the district, is 60 feet above low water mark. Owing to the fact that the streets running parallel with the river, are, as a rule, ex-

ceedingly level, the sewers which traverse them are of very low grade.

"In this district, during the month of August, 1877, diphtheria suddenly began to prevail in a manner to attract attention, and in a very short time threatened to assume the proportions of an epidemic. As previously stated, the deaths in this district during the first month of the outbreak numbered forty-three. Estimating one death to every five cases, there must have occurred to produce such a result over two hundred cases.

"The evidence is strongly presumptive, that in the sewers, particularly the one traversing Washington street, in which a solid mass of filth from one to three feet in depth had accumulated, the specific poison, or whatever you choose to call it, which produces the disease known as diphtheria, had found a lodgment and a favorable soil for its development and multiplication. To the local sewers, undoubtedly, was due the fact that the disease selected this district as its habitat, and from this locality as a center, radiated, presumably by virtue of its contagious properties, in every direction.

"The first cases occurred in immediate proximity to the Washington street sewer. This sewer, including its branches, is a little over a mile and a half in length. That portion of it running from Tenth to Seventeenth street was built in 1851. In 1866 it was extended to the river. Beginning at the foot of Eighth street its main stem traverses that street to its intersection with Carson, from this point it passes diagonally through private property to the intersection of Ninth and Washington, and from this point traverses Washington to Seventeenth street. It is constructed of brick with five feet internal diameter from its mouth to Twelfth street, four feet in diameter from Twelfth to Fourteenth street, and two feet ten inches in diameter from Fourteenth to its terminus at Seventeenth street. The average grade of the main line of this sewer is said to be one foot per hundred. Judged by the grade of Washington street from Ninth to Seventeenth it must be considerably less in this part of its course. It has twenty-nine street drops, *none of which are trapped*, the emanations therefrom being a source of great complaint. The refuse from a slaughter-house drains into the drop at the corner of Washington and Eleventh streets. At the time of the outbreak of diphtheria this sewer had not been cleaned since its construction in 1851—a period of twenty-six years—and, as previously stated, was 'choked' throughout the greater part of its course with a mass of filth from one to three feet in depth."

So much for the Washington street sewer and its high capabilities as a contagion breeder. Let us now follow Dr. Snively in his examination of the other "running brook."

"Following closely upon the development of the disease along the Washington street sewer and its branches, a similar development occurred among the more elevated branches of the Twentieth street

sewer, so that the outbreak may be said to have been simultaneous throughout the infected district.

"The Twentieth street sewer, including its branches, is about two and a half miles in length and was built in 1867. Its main stem is constructed of brick, with six feet internal diameter. Its main branches are also constructed of brick, having diameter five, four and three feet. A pipe sewer four feet in diameter—being a continuation of the Eighteenth street branch—extends a distance of two hundred and seventy-five feet up the steep hillside to Pius street. This sewer would appear to have acted as a chimney or ventilator for those on the flat ground below, as the deaths were most numerous in the immediate vicinity of its terminus."

Thus the poor wretches who supposed that by taking up their abodes upon high ground they were going to insure themselves a healthy location, in consequence of their own ignorance of the simplest laws of physics, and the worse than ignorance of their constituted authorities, were only choosing a spot where the deadly infection might most surely reach them. "The remaining branches are constructed of fifteen-inch pipe. This sewer has a good grade with the exception of those branches which traverse the streets running parallel with the river. The street drops connected with it are provided with traps with the exception of seven on Twenty-first street, which are a source of much complaint because of offensive emanations. About a dozen slaughter-houses are located near its terminus on Twenty-first street, the refuse from which is conveyed by it to the river."

As showing how carelessness and ignorance may convert that which should be an aid to sanitation into a positive instrument of atmospheric poisoning, it is alleged that the drops were also constantly becoming offensive, owing to the fact that people ignorantly threw stale eggs, vegetables and all sorts of material into the drop, the most convenient place of deposit, under the delusion that they would in some way or other get into the sewer and be carried away. It will be readily seen that from this cause the drop and not the sewer may often be the true source of offensive emanations.

"Both the Washington and Twentieth street sewers are without systematic provision for ventilation. Man holes are provided at intervals, but are covered with tight fitting cast-iron lids."

The existence of fearfully insanitary conditions in the city of Pittsburgh previous to the outbreak of diphtheria is thus clearly shown. But these conditions were evidently no new thing. They had existed for years back, only growing each year in intensity and lethal power. To what are we to attribute their sudden passage from the passive to the active condition? What was the spark which exploded the mine? The explanation of Dr. Snively given below is undoubtedly the correct one. It has a special significance for those of us who live in Philadelphia. There are large sections of this city in which, during sum-

mer storms of the slightest severity, the sewers not only refuse to perform their ordinary duty of carrying off the rain-fall but vomit forth their stinking contents until the streets are, for squares, flooded knee deep. What must the effect of this pressure be upon the traps of houses on a higher level. I venture to say that there are few houses in the city in which, with a strong south-east wind and a high tide, one or more traps are not forced in the manner indicated.

"In cities which drain into tidewater," says Mr. Edward S. Philbrick in the *Plumber*, "the outfalls of the sewers are generally covered at high water, either every day or at spring tides. If the ends have no gates the tide enters and fills the sewer as far back as its level allows. If gates exist they shut with the flow of the tide and sewage accumulates behind them with a result often almost exactly similar to what would occur without gates. In either case a large volume of air is driven up from the outfall towards the ramification of the system by every flood tide which covers the mouth of the sewer, only to be drawn back again when the ebb tide allows the sewer to empty itself. If this air does not communicate freely with the outer air a pressure of several feet of water must necessarily result, alternating the vacuum to the same amount every twelve hours.

"Large variations of pressure inside the sewers may also arise from the variable quantity of sewage flowing in them. Nearly all the sewage is discharged from the houses during the hours of daylight, the flow during the night being very small in comparison. Hence a periodic increase and decrease of the amount of air space within the sewers, dependent upon and varying inversely with the amount of sewage flowing. This is particularly noticeable among manufacturing establishments, where much water is used during working hours, and which do not run during the night. Of course, the air must leave the space to make room for the sewage in the morning, and, as the flow of sewage diminishes in the evening, the outer air crowds in to fill the vacuum by whatever openings or ducts are most available."

Dr. Snively remarks—

"Sewers will always be dangerous enemies in our midst, until the sanitary engineers show us how to ventilate them, until this be successfully accomplished, the residents possessing sewer connections, will be compelled, in order to protect their health and lives, to resort to traps. These, in whatever manner constructed, may, under certain circumstances, be unreliable. During a heavy rainfall, the sewers are filled with water. The gas must therefore be displaced, and as the man-hole covers are tight, and the street-drops, already trapped, are rendered still more secure at this time, by the floods of water pouring through them, it must of necessity blow out the weaker traps in the house connections and enter the dwellings.

"It is exceedingly probable, that to a series of events of this char-

acter, was due the outbreak of diphtheria among the South-side sewers, which we are considering.

"The records of the signal office for the year 1877, show that prior to July 2, there occurred no heavy rainfall, or sudden and violent rain storm, of short duration but sufficient to fill the sewers. During the night of July 2, rain fell to the amount of  $1\frac{1}{2}$  inches in seven and a half hours. This was equal to 20-100 inch per hour, and must have poured an immense volume of water into the sewers. During the afternoon of July 27, there occurred a rainfall of 50-100 inch in a storm of one hour's duration—sufficient to test their utmost capacity." This would cause violent surface flooding of short duration. Its effect upon the sewers may be inferred from the fact that the velocity, force, and volume of water was sufficiently great to sweep a man, who was engaged in cleaning the Twentieth street sewer, a distance of 850 feet into the river. "This disturbance of the sewers preceded by but a few days the outbreak of diphtheria. On August 12, rain fell to the amount of 40-100 inch in a storm of thirty-three minutes' duration. Again, on August 15, rain fell to the amount of 60-100 in sixty-five minutes. We find, therefore, that there occurred during the year 1877, *one* heavy rain-fall, and *three* sudden and violent rain storms of short duration, but amply sufficient on each occasion, to cause an immense volume of water to be discharged from the hill-side into the sewers; the effect of which, as previously described, would be to force the sewer gas through the connections and into the dwellings. The date of occurrence of these four disturbing events, *coincides* to say the least, in a very suspicious manner, with the outbreak of diphtheria in this locality."

It is claimed by many sanitarians that the plan adopted in Pittsburgh, and in most of our cities of making the sewer, also the carrier of storm water is a mistaken one. One ground for this opinion is that just expressed so clearly and forcibly in the last quotation. The other, or one other, is that the sewer must be made very much larger than its legitimate object demands, and hence be comparatively empty, except during storms, thus affording an opportunity for the deposit of solid material in its course from want of force of flow to flush it. The above history seems to be strongly confirmatory of this view.

Such being the facts with regard to the danger of imperfectly protected sewer connections, is it not almost inconceivable that individuals could be found sufficiently reckless to omit all precautions whatever in forming such connections? And yet we are told that the testimony of the street commissioners was, that but a small proportion of the property owners possessing sewer connections had been at the trouble or expense of providing them with proper traps and ventilators. Upon this subject, also, Dr. Thomas, in his report to the Board

of Health, says: "The first, and a majority of the cases of diphtheria seen by me, were in close proximity to the Washington street sewer and its connections. This sewer is so badly constructed as to be a propagator of disease. A great error committed by landlords along Washington street and the side streets, is the connecting of cellars, water-closets, and cesspools with the sewers without the addition of traps or ventilators. So long as this condition of affairs exists, we must expect, and will have, 'germ' diseases."

Not without its mournful basis of truth was the old superstition which tenanted the caves of the earth with foul dragons ever on the watch to seize, and wrap in their loathsome folds, the unwary mortal who ventured within reach of their pestilential breath, even stealing, under the cover of night, into human habitations, and stupefying sleeping victims with their noxious exhalations, until they fell easy victims to their rapacity. Under every home, in every city, lies such a cavern, filled with like noisome beasts. "Eternal vigilance is the price of safety" from their insidious approaches.

I would that I could burn the red dots upon this map, every one of which is a house of mourning, as with an indelible brand into the brain of every one who looks upon it, so that ever afterward, when the word diphtheria met his gaze or fell upon his ear, the course of these serpentine sewers thickly clustered with their fruitage of death, might start into relief before his mind's eye, and the thought of sewer-poison instantly be present with him.

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#### XV. The Hygiene of Old Age.

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Within a few weeks the city of Philadelphia has been called upon to mourn the loss of the man who, although very far from intellectually the greatest within her borders, as a citizen was preëminently chief. Dying at the age of eighty or eighty-one years, he is universally spoken of as being gathered like a ripened sheaf; yet, within a week of his burial, he was full of mental and physical vigor, and his death at the time was as unnecessary and avoidable as though he had only reached threescore years. A very notable percentage of the deaths of persons who have been successful in life, and have attained beyond the seventieth year, could be, by proper care, long postponed. Failure in life in a large proportion of cases saps vitality, and the man who carries the load of self-knowledge of such failure lives under a persistent strain, whose effects, though usually not recognized, are none the less

irresistible. In order to protract an advanced life it is well to understand not only the dangers that beset such life, but the reason why old age has been attained.

The humorist is greatest when underlying his rollicking is the lesson of a great truth; but perhaps few readers, when they enjoyed the broad fun of the "One-Horse Shay," as portrayed by our inimitable Holmes, have recognized the fact that the man who reaches old age does so largely because he has been constructed upon the principles of the famous vehicle "that ran for a hundred years and a day."

Barring accidental deaths from railroad collisions, typhoid fevers, lightning strokes, and other more or less preventable causes, the man who is so built that he is equally strong in all his parts, lives out his appointed days.

Excessive strength in one part is a veritable source of danger. The athlete perishes because his over-developed muscular system perpetually strains and finally wears out a heart or a lung that was originally constructed for a muscular apparatus of half the power of that which he has artificially built up. The larger proportion of mankind die early on account of some local weakness. It ought to be generally recognized that human age is not to be counted by years, and that in some constitutions the general tissues are older at fifty than they are in other individuals at one hundred. Many of the cases of so-called neurasthenia, or nervous exhaustion, of men and women suddenly or gradually breaking down at forty or fifty, ostensibly from over-work, are really cases of premature old age, and are to be nursed and treated precisely as other individuals would be who had reached to fourscore years. Moreover, a larger proportion of early deaths are the result of some vital organ being originally endowed with a longevity less than that of the rest of the organism.

The reason that consumption is so often utterly irremediable is to be found in the fact that in not a few cases the lung has reached its allotted term of days, and must die because its vitality is exhausted. If an eye, or other not vital part, fails from lack of vital power, the man exists; but if a lung dies, he perishes.

The result of these lucubrations is to lead us to this point, namely, that the individual who enjoys fair health at seventy-five years of age has probably been built upon the principle of the "One-Horse Shay," and that he should be treated as a wise man would treat such a venerable instrument of progression. He would certainly keep it off Philadelphia cobble stones, and allow it only to be bowled along some smooth turnpike, and especially would he avoid all jolts and jars which would throw an unexpected strain upon one part. The principle involved in such case is that which is most vital in the treatment of the old,—protection, and especially protection from strain of any one vital part. An old man exposes himself to inclement weather, and especially to a high wind, which suddenly drives the blood from



the surface upon the internal organs, and at the same time by its very force checks the enfeebled movements of respiration, which aid in forcing the blood out from those organs. As a result, the man perishes at once, because he has thrown too great a strain upon a weak heart, or, if able to momentarily resist the strain, dies in a few days of pneumonia, due to the congestion of the lung. I have known the sudden shock of good news to strike the old man down, as fatally as the pole-axe fells the bullock, by causing the blood to rush with renewed force through the brain, and tear its way through the weakened walls of the blood-vessels. Again, the violent emotion of a sudden bad news may overwhelm a heart which, with care, would have sufficed for its duties for many years. The young athlete in the boat race pulls at his oar until he drops from heart-strain, and, if the heart-strain has not been too severe, recovers himself in a few weeks, because the vital elasticity of the heart-tissues is in highest vigor. But the enfeebled and brittle heart-muscle of the old man, strained in some hurried effort to catch a railroad train, or in some equally unreasonable procedure, has no power of recovery, and rests itself only in death. What is true in regard to the healthy ordinary conditions of the old man is more abundantly true in regard to the diseases of the old. Medicines that perturbate—measures that bring relief through violent local actions cannot be borne, and are not to be employed. At the same time, when possible, it is most essential to arrest at once any incipient disorder in the aged. I knew an old doctor, renowned in all lands, who lived ten years beyond the period attained before by any one of his name, largely because, knowing himself thoroughly, every few weeks he arrested in its inception an attack, which, in a few hours, might have gathered fatal force.

I feel some hesitation in attempting to point out in detail the application of the principles which have just been enunciated, lest this paper may fall into the hands of aged persons, and be substituted for a careful consideration of their individual cases by some skilful medical practitioner.

Every person, when he advances in years, should go over his whole methods of life and personal habits with some wise counsellor, and should adapt his mode of life to the peculiarities of his individual case.

With this warning, it is probably safe to briefly point out some of the more important details in the regulation of the life of old people. The first question is in regard to food. The teeth in old age are, of course, lost, and they should, unless under exceptional circumstances, be replaced by artificial teeth, for the thorough chewing of food is even more necessary in the old man than in the young, because in the old the digestive powers are apt to fail. With the best artificial teeth mastication is apt to be imperfectly performed; hence the food of the aged should be soft and readily comminuted, and especially should it be of easy digestion. Very few old people need stimulating

diet; very many are injured by an excess of nitrogenous food. The kidneys, like all other organs, are feeble, and, if meats and other rich foods are used in excess, they greatly increase the strain upon these organs. Milk and milk products, or preparations of breadstuffs cooked with milk, should form a very large proportion of the food of the ordinary aged individual; but individual peculiarities differ so much that personal medical counsel should in all cases be taken, so that the diet may be regulated to the needs of the individual case. Very many old people are hurt by the use of food in excessive quantity; but little exercise can be taken, all growth has ceased, and the bodily furnaces which make heat are able to destroy but very little of food fuel. Some little time since I had occasion to lecture on this subject at the Philadelphia Hospital, and an assertion that I then made that most old people are more comfortable, enjoy better health and probably live longer for the use of wine, has met with very severe disapprobation at the hands of some of the profession, whose strong sympathy with the temperance movement dominates their judgment. No valid reasons have, however, so far as my judgment goes, been brought forward to lead me to change my opinion. In the overfed American people the habitual use of wine during youthful or middle age and vigorous health is, we think, an injury rather than a good; but when the powers of life are failing, when digestion is weak and the multitudinous small ills of feebleness perplex and annoy, one or two glasses of generous wine at dinner aid digestion, quiet for the time being much nervous irritation, and in no way do harm. The sum total of ruin wrought by alcohol in the world is appalling, but it is not lessened by our shutting our eyes to the good that wine properly used may achieve. When in the aged there is a distinct failure of vital power, and especially of digestive power, the call for the habitual use of alcoholic liquors is, in my opinion, imperative. The danger of the formation of any evil habits when a man has crossed the line of seventy is so slight that the most conscientious physician need not hesitate in recommending the daily use of alcoholic beverages to his patient.

It is, perhaps, not universally recognized that in numerous cases of various character death finally is due, in greater or less measure, to cold and to an absolute failure on the part of the body to keep itself warm. In the old the heat-making functions are exceedingly low, and hence it is that few old people are comfortable in a room whose temperature is less than 80°. It is especially important, therefore, that an abundance of clothes be worn by old people; but the very weight of the clothes oppresses, so that it is important that lightness of material should be combined with warmth. There is no ordinary garment which compares in heat-preserving powers with the buckskin jacket, and, in our climate, every man who passes the seventieth year should furnish himself with such covering. At first the jacket

should be only worn when going out of doors; but in very advanced age it should form a part of the habitual underwear. The jacket should be high up in the neck and long in the sleeves, and should be of such a length as to thoroughly cover the abdomen. If worn as an under-jacket it should be perforated so as to allow the escape of the vaporous emanations from the body. Whenever there is any tendency to abdominal weakness, in addition to the jacket and the ordinary warm underclothes, an abdominal flannel bandage should be worn. It ought not to be forgotten that the mass of blood of the human body is in the abdominal organs, and that this is especially so when the circulation is sluggish. It is affirmed by authority that after death all the blood in the body can be put in the relaxed abdominal vessels; hence the importance of maintaining the abdominal warmth, and hence, also, the good effect in feeble people with pendulous bellies, of the bandage, which helps to sustain the relaxed vessels, and thereby maintain the general circulation. The mechanical effects of tight abdominal bandages are well understood by the profession in the treatment of ascites. It is well known that the sudden removal of the fluid by tapping over the abdominal cavity takes away so much pressure from the abdominal vessels as to cause them to relax and draw the blood away from the heart and lungs and brain in sufficient quantity to produce fainting. It is to prevent this that the patient about to be tapped is bound up, and the bandage continually tightened as the water flows off. The importance of the habitual abdominal bandage is, perhaps, no less although not as universally recognized.

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#### XVI. Our Drugs and Medicines.

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By L. WOLFF, M. D.

President of the Philadelphia Pharmaceutical Examining Board, Demonstrator of Chemistry, Jefferson Medical College, etc.

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The use of pure drugs and medicines, properly compounded and administered, constitutes a most important feature for the preservation of health and the prevention of avoidable death. In all civilized countries it has been made the duty of the State to control and supervise, this through competent officials and special laws. The harm arising from inert or impure drugs consists not only in defeating the end and object they are intended for, by admitting of the unchecked progress of disease and the fatal consequences thereof, but also in their improper and poisonous admixtures which make them destructive to life and health. Many of them possess powerful and toxic action, and consequently when compounded and administered in improper quantities and doses often give rise to most disastrous results.

That there are annually a number of valuable lives sacrificed from this cause is as little to be doubted as that all the cases of suffering, illness, and death therefrom are certainly avoidable by proper knowledge, forethought, precaution, and legal supervision. The persons who cause the deplorable accidents with drugs and medicines, though to be pitied for their participation in such sad catastrophies, are in the most instances culpable of criminal neglect, for none of these cases can be classed as unavoidable accidents, as with proper forethought by individuals and communities they might certainly be obviated. It is the duty of the State not to leave the measures and safeguards against such dangers to individual discretion any more than to leave the measures for protection of railroad crossings or the escape from fire of overcrowded buildings to individuals or companies controlling them. The duty of the government in this respect should be in two directions: First, to insure the importation and manufacture of pure drugs and medicines only; and secondly, to provide for their distribution in a manner that will secure to the individual freedom of danger from that source and the full benefit thereof intended for him.

How this is accomplished so far with us can be gleaned from the present system in vogue. All drugs and medicines imported from other countries are subject to examinations before passing the custom house by the government drug inspectors, appointed for this purpose. If found impure, deteriorated, or of inferior quality, they are either returned to the shippers or destroyed. After leaving the custom house these goods, the majority of which are of a poisonous nature, pass into the hands of the importers, wholesale dealers and manufactures, by whom in turn they are disposed of or manufactured into other compounds, extracts, or alkaloids. How successful drug inspections are carried on at the custom house depends largely on the specific knowledge of the drug inspectors, who are presumed to be well fitted for their positions, capable of conducting qualitative and quantitative analyses, and experts in the macroscopic and microscopic examination of drugs in pharmacognosy. After the government inspector passes the drugs, medicines, and chemicals, the State exercises no further control over them, nor is there any record of their distribution. A great many of the chemicals consumed in this country are manufactured in this city on a large scale, and it may be said, to the credit of our manufactures, of exceptional purity and reliability. That this, however, is due more to the high character of the members composing our manufacturing firms than to the precautions adopted by the State is also true. No provision is made that the men employed in such establishments possess sufficient education and special skill to prevent errors of serious consequence. None of our wholesale drug merchants and brokers are obliged to show professional skill or knowledge nor is this required of their assistants. Still, many of these firms not alone sell at wholesale but supply also consumers directly,

and that grave mistakes often arise from this source is scarcely to be wondered at. The would-be poisoner has less trouble to procure a pound or more of arsenic than a few grains, and he has in that manner the advantage besides of not being tracked in his transactions by a poison register. Whoever has noticed the careless manner in which packages of poison are stored promiscuously with those of food products, or other substances intended for large consumption, can only wonder that wholesale poisoning is not of more frequent occurrence. The textile colorer and dyer, the dye manufacturer, and other artisans use these poisons in immense quantities, to be handled by ignorant persons, who permit the residues to run into our rivers, and there to pollute the water we drink every day. Our common carriers make no distinction in handling poisons, and the package of arsenic may be stored along side of flour, sugar, salt, or other foods, only necessitating shaking of the car or the breaking of a package to produce a disaster so terrible in effect that everybody would condemn the government that permitted such practice, when by the simplest precautions accidents of such kinds might have been avoided.

But the loose manner of handling and distributing poisons is not the only danger to public health. Every day thousands of parcels of medicinal agents are sent to the bedside of suffering patients, who await them with expectations of relief from suffering as the sacred gift of nature, upon which their recovery, and with it prosperity and welfare to themselves and their family depends. Can we deny that every day in at least one or more instances, these expectations are defeated by the carelessness, neglect and incompetence of the person whose duty it is to supply them in accordance with certain regulations, laws, and of a certain standard?

The great State of Pennsylvania, the cradle of American pharmacy, is to-day one of the few States of the Union which does not protect her citizens by a law regulating the sale of drugs, medicines and poisons. You may leave this city to travel into the interior of the State, be taken ill there, and your medicines may be dispensed to you by the ignorant youth, raw from the pastures or by the cunning villain, who considers drugs and medicines a profitable investment in the measure that their substance is diluted or they themselves substituted by articles of less value.

Still our legislative body has never seen fit to pass any of the pharmacy acts that were from time to time presented to them. While it is true that we have the best school of pharmacy of the country in this city, nothing is done as far as the State is concerned to compel those that expect to practice pharmacy to avail themselves of its teachings.

The time is probably well within recollection of those here assembled, when fatal cases of poisoning from neglect and ignorance or incompetent drug clerks filled periodically the columns of our daily

papers. To such an extent did this prevail, that at last a special act regulating the practice of pharmacy and the sale of medicines, drugs and poisons in the city of Philadelphia was passed by the Legislature in 1872. This law, incomplete and faulty as it is, has acted so well, that since then no fatal case of poisoning from ignorance has been recorded. The green youngster and incompetent clerk who by mercenary employers had the lives of the public at his mercy, has made way to educated and intelligent assistants. As a consequence I think that to-day, with but few exceptions, you can trust your life safely to the skill of Philadelphia pharmacists and their representatives. But, while I would state here that there is no more painstaking, intelligent, and better educated set of pharmacists anywhere than in this city, there are nevertheless a few amongst them whom the law cannot reach, and who carry on their business for which they are not fitted openly and in defiance of the authorities. That this is so is the fault of the construction of our pharmacy act, and works injustice in several ways. Those of you who are able to pay fair prices and go to respectable establishments can be assured of pure drugs and accurate dispensing; but is the State not also bound to protect the poor who are led by dire necessity to seek cheap shops where quality is made to suit the price, and where no qualified persons are employed to to compound? Many a poor ignorant colored man still pays his hard earned money to the Voodoo doctor for charms of various kinds. The herb doctor's shop flourishes in many of our thoroughfares; and the pseudo-Indian herb doctor with his attractive Indian show and flaring advertisements deludes the masses to purchase his worthless wares.

The patent medicine vendor still holds his sway and openly defrauds the ignorant. By the power of the capital he controls he has the sympathy of the press, which he patronizes freely, and so defeats the ends of justice with disregard of law, and obtains protection for his trade from legislative bodies. While the pharmacist is required to possess sufficient skill, qualification and education, these incompetent quacks, with their cure-alls, have the right to endanger public health without restriction. The very fact that their remedies were originated by ignorant persons is often set forth as an argument to their advantage, and that they are still compounded by persons of the same stamp, who have no intimate knowledge of the articles they are handling is only too true. That many of these remedies are not even advantageously applied for the diseases they are recommended for is but the least to be said against them. Many of them contain deadly poisons which, as in some of the soothing syrups for children, often do harm and certainly retard and stunt the growth and development of our race.

If nostra and patent medicines we must have, let the law prescribe that they shall be prepared by qualified persons alone, and sold only by

such, to prevent their improper application. It seems a slur on the intelligence of our people that two-thirds of the money value expended for medicines should go toward the purchase of patent medicines. Just think of it! That two-thirds of all the money the people expend for medicines is wasted for stuff, of which perhaps the best that can be said is that it is utterly useless, while a great deal of it is certainly not adapted for the diseases they are recommended for, and a large portion of them do actual harm. They are probably all more or less frauds and delusions from the various bitters which offer but an excuse for tippling—the blood purifiers which are relics of a past age with its humero-pathology—to the more recent devices cunningly constructed so that by the use of irritant oils they should simulate electric or galvanic effect. To say that at least two-thirds of all the money expended for medicines is actually wasted would be of little consequence in comparison to the harm done by it.

The promiscuous use of medicines is no longer considered medical practice, and the therapist without diagnostic skill is more to be feared than the diagnostician without remedial agents. Still the blatant quack assures us of his power of curing diseases of which he does not know the first thing, or which he could not recognize if they were brought before him. They belittle the efforts of the medical profession who derive their knowledge from the experience of hundreds of years, and the application of natural sciences to the study of disease, and are certainly honest in their endeavors, while the nostrum vendor, the creature of a day, has but one end in view, the filling of his pocket. The intelligent member of society can discriminate for himself, but those who have not been blessed with a higher education, the toilers of the soil and the workshop, deserve to be protected by the State from cunning villains with designs upon their hard earnings in the hour of illness and dire distress, even more so than the citizen whose wealth is endangered by the pickpocket and the burglar. In older States and countries this has been recognized, and measures to that end have been enacted: Many of the European States entirely prohibit the sale of nostras, while in others they can be sold only when their composition is made known and tested. Can we ask less of our government than to restrict this growing abuse, or at least place it under control to prevent its harmful influence? The question arises, What can be done to accomplish this purpose? As already stated, from the moment of importation the State gives up all control of drugs, poisons and medicinal agents. Their proper elaboration by the manufacturer and middlemen can scarcely be enforced or controlled, but before they reach the consumer some measure ought to exist to protect the public.

In this Commonwealth there exist a few laws regarding the adulterations of food and medicines, but these are inefficient and with no provision for their enforcement. This latter seems to be the weak

point with all these laws. Their enforcement is everybody's business, and we all know well that what is everybody's business is nobody's business. Whoever heard of a prosecution under this act, although it is well known that there are special brands of grocer's cream of tartar containing 75 per cent. of foreign material, and that many of the spices contain sawdust and other inert, if not hurtful, substances, and so with many other articles of the same kind.

It is a common idea that the retail pharmacist is, to a large extent, guilty of adulteration, sophistication and substitution. In this city this was acted upon not long ago by one of our prominent daily papers; the result, however, showed but little proof for such assertions notwithstanding the courted investigation by the druggists themselves. Though this does exist with a few, it is generally the case with those who lack proper professional education and carry on this business contrary to the law. Education and knowledge brings with it a moral sense of responsibility and an endeavor to act right and honestly.

The result attending the enforcement of the pharmaceutical law of this city by the board of examiners for this purpose has greatly improved the moral condition of the retail drug business, until at this time the physician may safely send to any reputable drug store in the vicinity of his patient with the assurance of obtaining the proper remedies he desires, and the relief to his mind that any error or slip of his pen will be duly controlled and corrected by the pharmacist. The anxious parent need no longer tremble lest the health-giving potion to the invalid child should, by the error of an uneducated drug clerk, bring death and misery in their household. That there is a need and place for such supervision may be learned from the reports of the Pharmaceutical Examining Board, which states that 33 per cent. of all applicants for the certificate of qualified assistants were refused, and only 39 per cent. of all applicants for the proprietor's certificate had this granted to them. Still the Legislature of this State refused to give a similar law to the entire Commonwealth. It may be better surmised than stated what agencies have been at work to such an end. The grocer and dealer in general merchandise still sells without restraint arsenic, Paris green and other deadly poisons, which are kept over and alongside the sugar bin, while the laudanum bottle and the host of patent medicines go largely towards making up his stock in trade. Is the public benefited thereby? Is the loss of health and life annually arising from such loose practice offset by the slight gain of a few? Is the thriving trade of the cheap medicine vendor who, in opposition to all law and justice, incorporates everything and of the lowest quality in stock, an encouragement to the conscientious pharmacist, whose skill and moral responsibility is a guarantee for your life and health?



The inference is obvious. The State owes it as a duty to the public that it shall protect them from dishonest dealers in and compounders of medicine, and to the honest and competent pharmacist that it shall protect him from unfair and unlawful competition. The standard required should be high, the laws severe and their enforcement assured. While the local law of this city has done much toward improving the morale of pharmacists and protecting the public from incompetent men, it is still sadly deficient in its effect as long as it fails to bring all offenders to justice, and as long as it does not control the quality of drugs and medicines as well as the vendors and compounders.

The great Keystone State should no longer stand alone in its unenviable position as an asylum for the incompetent druggists and drug clerks of the country. The State Board of Health and all sanitarians should unite to urge the passage of a law which will secure for the public universally pure and reliable drugs, properly compounded by competent persons only. Many of the States have adopted such laws, which have proven as deficient as our own. Let us profit by their experience so as to insure for us measures which are sweeping in extent and safeguards in every respect against such sad catastrophies as have but recently in a neighboring State robbed two loving daughters from their fond parents.

What practical measures can be adopted with these objects in view? The competition of free commerce cannot be applied to such purpose. Restrictive laws alone can be protective. Let the sale of drugs, medicines and poisons be restricted to those alone that have fitted themselves for it and have amply proven their fitness. Drugs and compounds of powerful action should be classified by law and directed to be kept apart from others less active. They should be kept in locked receptacles, the keys to which should be held by the competent pharmacist and his qualified assistants alone, and should be opened only in presence of a witness to control their proper disposition. Not the retail druggist alone, but all those who deal in drugs, medicines or chemicals, either at wholesale or retail, should be included in this act and required to show competency, both in proprietor as well as in assistants. None others besides these should be allowed to deal in medicinal articles of any kind save the physician dispensing to his patients directly. The quality of all drugs and medicinal articles should come directly under the supervision of the State Board of Health, who should direct at least annual inspections of all establishments where medicines are sold. And lastly, the enforcement of such an act should be placed with the same board to whom all delinquencies should be reported by the inspectors of drugs, appointed by them, and also the examiners in pharmacy and others concerned therewith.

With such a law and thus enforced I have no hesitancy to say that the tales of the murderous drug clerk would be a thing of the past,

and drugs and medicines will prove as they are intended, health-giving instead of dangerous to public safety, and destructive to health and life.

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#### XVII. On Continuous Preventive Disinfection of House Drainage.

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By HENRY HARTSHORNE, M. D., of *Philadelphia*.

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The object of this convention is practical. We want, therefore, most of all, facts. But facts are only useful when so marshaled as to form intelligible conclusions, which can be applied in practice.

Facts concerning the prevention of infectious diseases are of several kinds: 1. Evidence as to the local and personal conditions under which those diseases occur, with greater or less violence, width of prevalence and fatality. 2. Scientific proof of the nature of the essential specific cause of each particular disease when such proof has been obtained. 3. Sanitary experience with the use of means to prevent or arrest the progress of diseases on a larger or smaller scale. 4. Scientific experimentation to ascertain the most effective agencies for the destruction of the specific causes of diseases when they are known.

Under two of these heads, allusion is intended to be made to the "theory of disease germs." I have long believed in the probability that some diseases are in some manner produced by minute organisms, microbes. In a lecture on cholera in our university in the summer course in 1866, I expressed the conviction that epidemic cholera must have such a specific cause. But the true scientific spirit requires close scrutiny of every asserted verification, even of a very probable theory. We believe, to use an illustration, that the anarchists now troubling our country are mostly comers from the continent of Europe. But it will not do, therefore, to arrest every Bohemian or Pole as soon as he arrives and dub him an anarchist. So I do not consider the evidence sufficient as yet to prove that either the comma bacillus of Koch, or the microbes of Emmerich, or of Finkler and Pryor, are the essential producing causes of cholera. It is quite possible, indeed, that the microbes, the minute organisms, which are the specific causes of some diseases, or at least their spores are, *ultra-microscopic*; too small to be discovered by the highest power yet reached, or likely to be reached, by the microscope.

Such inquiries ought, of course, to be zealously persevered with, and their results carefully appreciated. And this is equally true of experiments for the destruction of microbes by powerful chemical or other agents. Such experiments have been made by many able scientists in this country and Europe. Excellent work of that kind has been done and reported upon within the past year by a commit

tee of the American Public Health Association. At the same time it is necessary here to emphasize the importance of also justly apprehending the other class of facts already named—those of sanitary experience with the actual use of means to prevent or arrest the progress of infectious diseases. Put together the well-attested results of this experience and those of scientific experimentation in regard to the discovery and destruction of microbes or disease-germs, and we have a very safe and sound basis for sanitary practice.

Of actual experience in the prevention of disease by disinfection, Dr. O. W. Wight, health officer of Detroit, Michigan, reported an excellent example at the meeting of the American Public Health Association, at Washington, last December. Finding the sewerage of Detroit in a bad condition, with a great deal of mortality from diphtheria, scarlet fever and analogous diseases, he went to work vigorously; and, with the aid of citizens, put into the 200 miles of the city's sewers 275,000 pounds of sulphate of iron. He also burned in the sewer manholes, under cover, three tons of sulphur; the gas from which was found to pass freely through the whole drainage system of the town. In such close coincidence with this disinfection that it must be reasonably regarded as its effect, there followed a marked diminution in the number of cases of, and deaths from, diphtheria and scarlet fever; in fact, almost a total cessation of those diseases. Such results must be accepted as of positive practical value, notwithstanding the experiments which have made it appear that sulphate of iron is not efficacious in the direct destruction of bacteria, and that sulphurous acid gas is so only in very large amounts.

Abundance of similar evidence, though seldom so clear and full as Dr. Wight's, is familiar to sanitarians. Nor is there any difficulty in reconciling it with a full acceptance of the theory of disease-germs. If it be admitted that these are the actual and essential causes of infectious disorders, then, where they exist, the thing to do is to destroy them. But, in this as in every other case, prevention is better than cure. Starving out an enemy is as certain a measure of hostility as striking him down with cannon-shot. While, then, there is a measure of plausibility in the assertion of the committee of the American Public Health Association that nothing ought to be said to be a disinfectant which does not destroy disease germs, this assertion does not express or contain quite the whole truth upon the subject. This much is practically admitted in the committee's reports. Thus Dr. G. M. Sternberg, U. S. A., writes,\* referring to the sulphates of iron, zinc, etc.: "The value of all these agents as antiseptics is beyond question, and when the object in view is to prevent the development of germs in privy-vaults, cesspools, etc.," they may be recommended. More than this, however, I would add, is to be said. How do "germs" act in producing diseases? This has not been demonstrated. Many authori-

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\* *Medical News*, August 22, 1885.

ties, among them the great bacteriologist, Dr. Robert Koch, believe it most probable that they act by generating poisonous materials, which are the direct disturbers of the health of the body and the causes of death. In a discussion at Washington in the American Surgical Association, so lately as April 29, 1886,\* Dr. J. S. Billings referred to the poisonous alkaloids—*ptomaines*, and the more recently discovered *leucomaines*, formed in dead or diseased animal bodies; and then went on to say, that the only theory which we have at present to account for the evil consequences of the lower organisms in the body is, that much of their action depends not on their presence or immediate effects, but on the impression made on the nervous system by some production of the micro-organism; that is, some poison generated by it. Therefore we may hold it to be entirely possible for a chemical agent which will not, in any ordinary quantity or strength, destroy all bacteria, micrococci, or spirilla, yet to so antagonize or decompose the poisonous material which they produce, as to make them harmless. Moreover, there is truth and importance in the remark made by Dr. Formad at the close of yesterday morning's discussion in this convention: That "there may be organic matter, *independent of microbes*, which is dangerous to health." That there is such matter, capable of producing death as well as disease, is the well-founded conviction of many, probably of nearly all sanitarians.

The committee to whose valuable labors I have already referred, make the test of a perfect disinfectant, in the strictest scientific sense, to be the destruction not only of all microbes, but also of all spores. They state, however, that in the list of disease-germs which do not produce spores, there is good reason to include small-pox, cholera, yellow fever, diphtheria, erysipelas, puerperal fever and perhaps scarlet fever—a very important list. Also, Dr. Sternberg, in his prize essay on disinfection,† just published, says, that as a general statement it is true, that a disinfectant for one kind of micro-organism is a disinfectant for all in the absence of spores. I quote another sentence from Dr. Sternberg's essay.‡ "We hasten to say that the combined experience of sanitarians, derived from practical efforts to restrict the extension of infectious diseases, is of the greatest value, and, that this experience is, to a great extent, in accord with the results of exact experiments made in the laboratory."

Here, then, we have a clear and open ground for conclusions about practical disinfection. What is needed is, first, to destroy or purify all filth, which is always of unwholesome influence, and upon which disease-germs live and multiply. Secondly, when a disease-cause is actually present in a place, to destroy it, if possible, spores and all,

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\* *Medical News*, May 8, 1886, p. 530.

† P. 107.

‡ P. 106.

or to render it powerless by chemical antagonism of the poisonous material it produces.

Many agents are more or less available for these objects. The next question is, how best to use them. Ordinarily, this has been done spasmodically; irregularly. Some one dies, perhaps, as happened so lamentably a few years ago in the family of the distinguished chemist, Dr. Doremus, of New York, from sewer air poisoning; and then for awhile after this the drainage is looked to, and a few pounds or quarts of some disinfectants are used. But this is not the right or the rational way. It ought to be done *all the time*; to be continuous. The difference is much like between the two ways of dealing with anarchists and mobs. One plan is to leave them alone until they come with their rifles, revolvers and bombs, ready to sack the town, and then bring a regiment of soldiers, or a Gatling gun or two, to mow them down. The other and more reasonable way is to have a good police watch kept on them all the time, and shut up and disarm every Most and Spies and Parsons as soon as they begin to show themselves. Thus, prevention with clubs and hand-cuffs will be shown to be better than attempted cure with bayonets and cannon-balls. The only proper aim, then, concerning diseases is *non-infection*, by the continuous preventive use of disinfectant materials in house-drains.

While pursuing my investigations on this subject, in which I have been interested for a quarter of a century, I have been delighted to find that this aim has been practically reached by a simple mechanical and chemical device now already in use in many thousand buildings, under the not very well chosen name of the germicide. I venture to speak here of this because I think it is not so well and generally known as it deserves to be for the public advantage. By this apparatus, which may be readily attached to any water-closet without interfering with the plumbing, a flow of a strong solution of chloride of zinc, at the rate of about sixty drops a minute, is made to enter the closet-bowl or hopper *all the time*, whether the closet is used or not, by night as well as by day. Under its action there can be no chance for fecal decomposition or infection to occur. It fully realizes preventive disinfection on the principles which I have in this paper been endeavoring to set forth. There is with it also an arrangement for introducing the vapor of thymol into the room as an aerial disinfectant. I will not occupy time by dwelling upon that part of the apparatus, which I regard as secondary in importance, although, so far as it goes, of good intention and effect.

Thymol is a positive antiseptic, not merely an odorous substance, which, like eau de cologne, etc., merely covers up a bad odor with a less disagreeable one. Popular confidence in the disguising of foul smells, under a notion that it is disinfection, ought to be corrected. Moreover, it is important for it to be known that an atmosphere which

has no odor at all may be injurious, even dangerous to health. All foul smells are, it is true, to be suspected of having an unsanitary origin; and if, as by thymol vapor, we correct them, it is a benefit to the air in which they occur.

I speak the language of conviction when I apply terms of strong commendation to the chloride of zinc arrangement, called germicide, because it meets precisely and fully the theoretical requirements of preventive disinfection, and also it has been amply tested in practice in this and several other cities. Its beneficial action is affirmed by members of boards of health and other leading sanitarians in Washington, Cincinnati, New York, Boston, Baltimore, Chicago, San Francisco and Philadelphia. It has been in successful use for a considerable time in a number of our hospitals, and other public buildings, and in more than one thousand dwellings in this city.

An excellent place to see it on fair trial, which I have visited, is at the Brighton knitting mills of L. D. Cox & Co., at Eighth and Dauphin streets, where, I have been told, hundreds of bottles of Platt's chlorides were formerly used, in the ordinary way, with only partial and temporary effect, even in deodorization. Since the germicide *constant flow* system has been introduced there, the evil has been altogether corrected. In some factories the favorable influence of such a change on the general health of operatives has been very marked. In public school buildings, as an auxiliary to, or at least while waiting for, the somewhat elaborate method of heating and ventilation so well described here yesterday by Dr. Jefferis, it would undoubtedly be a great improvement upon the general neglect of the water-closet system in such institutions.

Chloride of zinc, according to the observations of the American Public Health Association Committee, in the proportion of five per cent. added to the material to be disinfected, can be relied on for the destruction of micro-organisms in the absence of spores. A twenty per cent. solution of it will destroy the vitality of the most resistant spores. By using Mallett's ingenious process, anhydrous zinc chloride is procured for germicide use in such a condition that water percolating through a mass of the zinc in small lumps or blocks makes a solution of very constant strength. This constancy has been carefully tested by S. P. Sharples, chemist and State assayer of Massachusetts. It does not act on lead or iron pipes. In the language of Dr. J. R. Nichols, editor of the Chemical News, it is to them "as harmless as a solution of common soap." This could not be said of chloride of lime or corrosive sublimate in solution.

Forty or fifty gallons of water, I am told on inquiry of its makers, pass through this apparatus in a month, dissolving about three pounds of chloride of zinc; of the latter, therefore, nearly two ounces go through the closet and drain every twenty-four hours. Traps thus

treated can never be emptied, either by syphonage or by evaporation; and this is of itself a very great advantage.

A trap with no water in it worse than none. Nor will it do to place too much confidence in air-vents for traps. When only open above, no air may pass through them at all; and even when there is also an inlet below, the ventilation may be insufficient. The most intolerably offensive smells I ever encountered were, one, not a water-closet, but an open and uncleansed substitute for it, an air-hole in a passenger car on the New York Central railroad; and the other a neglected water-closet from which the water had evaporated away, in a dwelling whose usual occupants were absent for the summer. Water does much more than air for such uses, and water, armed with a good disinfectant, will do much more still.

Water traps have been shown, by Drs. F. H. Hamilton and Doremus and others, not to prevent absolutely the absorption of foul sewer air and its escape into the house above the water seal. It has even been found possible, by the observations of Professor Frankland, of London, and Dr. Paton and B. W. Thomas of the Microscopical Society of Chicago, for micro-organisms so to pass, and to enter the air at least when the water is agitated by bubbles of fermentation. I am not inclined to speak of these occurrences as more than possibilities; ordinarily they can hardly add much to the dangers of house drainage. But those dangers are bad enough, from the imperfection of plumbing in some instances, and from the perishable nature of materials even when the plumbing has been good, to make it of prime private and public necessity to avoid them.

As to the expense of the germicide method, I must refer to those in charge of its administration, with which I have no connection and have but little knowledge of it. The cost is, however, I know, moderate. Dr. Sternberg's estimate of the cost of the effective use of chloride of lime for house drainage is one cent daily for each person; of his "standard solution" of corrosive sublimate and permanganate of potassium, two cents daily for each person. The constant employment of the former (chloride of lime) in water-closets would be impracticable for cogent reasons; and so would be that of corrosive sublimate, while the cost of the first of these would be about as great, and of the latter at least twice, that of the germicide zinc solution. We are accustomed to pay a stated sum every year for our water supply; another amount for our gas, and another for our coal as fuel. Surely it is worth while to expend a little every month toward the effectual preservation of our health and that of our families, without which all other expenditures are vain.

A bill has been introduced into the New York Legislature providing that every factory or other large private or public building shall, in order for sanitary protection, be fitted with germicide fixtures. I

believe that if, in addition to the regulations for plumbing lately enacted by our Board of Health, there could be also one requiring every house to have a sewer-connected water closet instead of a privy well or cesspool, and obliging every water-closet in the city to have a germicide attachment, it would not only correct what Colonel Waring has so well called our "home-made sewer gas," but would make disease-infection and extension almost impossible among us. Typhoid fever would greatly diminish, diphtheria would become rare, and cholera, if it should again visit this country, would pass us by almost or quite unharmed. Utopian as this may seem, yet only by such really effective measures of prevention can Philadelphia long maintain the reputation of being one of the healthiest cities in the world.

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**XVIII. A Plea for more Prolonged Isolation in the Management of Scarlet Fever.**

By **W. W. VINNEDGE, M. D.,** *of Lafayette, Indiana.*

It is taken for granted that we are all of one mind as to the desirability of imposing some artificial check on the spread of scarlet fever. Most of us are convinced that its only source of reproduction is an infecting material from the sick room conveyed in some way to the unaffected. All of us know that children are its chief victims, and, that it is a distressing and frequently a dangerous disease.

There is much diversity of opinion among public health officials as to how long a time scarlet fever patients should be isolated, and, whether in mild attacks of the disease, the cases should be isolated at all. Even among some physicians there is much uncertainty as to definite indications of the duration of infectiousness, and naturally the sick are frequently permitted to mingle with society too soon for public safety.

Few persons would hesitate to separate a child with sore throat, strawberry tongue, fine red rash, and a high temperature, from his companions or schoolmates, and to keep him carefully isolated throughout the fever stage, and perhaps a little longer; but, during later convalescence, separation would, in many instances, be so uncertain and imperfect that it would have little if any value as a protection to the susceptible. In mild cases of the disease, not sufficiently marked to cause anxiety or to oblige the patient to be placed in bed, the parents would sometimes probably be unwilling to practice isolation, especially if the father's business might be injuriously affected by a publication of the disease in his family.

The welfare and safety of the family of the daily laborer who reads but few if any books during the year, requires, as far as possible, that he



be accurately informed as to the propagation of this disease, as well as have a practical knowledge of the means used for its prevention. He should be taught in simple language, that "in this disease as in small-pox, the poison is given off from the bodies of the sick, and is not reproduced independently of them,"\* and that "it is propagated by a peculiar poison, which by reason of the tenacity with which it adheres to articles of clothing, and other peculiarities, we have good grounds for holding is a solid."† It should be made plain to the least informed that there is no knowledge of any means of protection against the spread of the malady other than isolation, cleanliness, and disinfection. Teachers in the schools should inform parents and pupils that it is not sufficient to isolate only the time of the fever stage,—or while the sick are confined to the bed or in-doors,—but that this means of prevention of the spread of the disorder should comprehend, in every case, all of the time from the beginning of the sore throat to the completion of the peeling process.

Frequent trustworthy reports of the spread of the infection having been traced to milk, admonish that dairymen and their families and employes be required by the authorities to practice greater cleanliness and a more prolonged isolation in the presence of this disease. Dairymen need instruction rather than discipline; they disregard the rules of public health from lack of sufficient information rather than from other reasons.

Since there is no knowledge of any means of protection against the dissemination of the infection, other than isolation and disinfection it is of the utmost importance that the intelligent use of these be well understood by the public.

It is not claimed that the period of infection of this disease can be determined by days or weeks, but it is believed that this can be determined with sufficient accuracy for sanitary purposes by the characteristics of the disease in its beginning and ending. The safe rule to be taught, particularly in the sick room, is that scarlet fever is contagious from the first appearance of the disease in the throat to the end of desquamation in the palms of the hands and the soles of the feet.

Since we have no prophylactic to hinder the spread of this disorder—as vaccination hinders small-pox,—its restriction is almost wholly a matter of intelligence and unselfishness.

In Indiana the public authorities cause a yellow flag to be hung up in a conspicuous place on every dwelling in which there is a case of this disease, as a friendly notice to warn all of the presence of danger. "Those who are associated with susceptible children have no right under any circumstances to visit the room of a scarlet fever patient, without taking the most thorough precautions with regard to

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\* Prize Essay, A. P. H. A., p. 133.

† Bartholow.

the disinfection of their persons and clothing immediately upon leaving it, and even with these precautions such a visit cannot be justified when it is made simply out of curiosity or friendship."

It is believed that a good deal of apparent carelessness on the part of the public is due to a misapprehension as to the termination of convalescence from this disease. Many consider the cure complete and the danger past with the disappearance of the rash or fever, or both, and the return of the appetite and natural sleep. Medical writers and teachers do not, according to the information the writer has been able to obtain, define this point with the greatest clearness and certainty; at any rate it is believed that it would be better for purposes of sanitation if utterances in text books on the subject were more direct, explicit and simple.

It has been stated heretofore that the reason the parents frequently fail to prolong isolation sufficiently,—that is, throughout convalescence,—is the absence of disability on the part of the patient; for the same reason that isolation is declined in doubtful or mild cases of the disease. This part of my subject can best be understood and illustrated by an example.

In an institution of learning near LaFayette, Indiana, attended during the past year by nearly four hundred young people of both sexes, an epidemic of scarlet fever made its appearance about mid-winter. One can readily understand the anxiety felt by parents, teachers and trustees for the welfare of the pupils and the schoolwork. However, the president of the university, under the advice and direction of the county health officer, rigidly enforced isolation and cleanliness, and the disease soon yielded to management and disappeared quickly. Forty students were ill. About the time the affected were all convalescent, it was noticed that A—B—, a young man, a student, boarding and lodging outside the school buildings, had a sore throat, but was not sufficiently ill to prevent him from attending recitations, or for that matter doing any work. Although he was unwilling, it was thought best for him to absent himself from his class for a time, and he left school to take temporary lodgings with a neighboring physician. The doctor thought the ailment "simply sore throat, and in the absence of fever and rash not contagious." Unfortunately the physician had a family, and in less than a week after the introduction of the ailing student into his house, his servant girl was seized with scarlet fever. In a note to me, under date of May 7, 1886, the kind hearted man briefly reports the case as follows:

"One severe case occurred in my family: An adult domestic, five days after exposure to one of the students who had previously roomed and boarded in Mrs. H——'s family, was seized violently with ulcerated and swelled throat, accompanied with the rash and fever. The disease was quite severe, and followed by a violent attack of acute

mania, which lasted about a week. She had albuminuria also, and became anemic, and was confined to her bed about three weeks, when convalescence began and complete recovery took place."

This case helps to strengthen the evidence as to the infectiousness of slight cases of scarlet fever, and at the same time invests doubtful cases of throat disease during an epidemic of the malady with a good degree of importance. In view of the foregoing case, and of similar ones that will arise in the minds of practitioners of medicine who have kindly read these statements, it is of the utmost importance to isolate slight and even doubtful or suspected cases of this deadly malady.

For the purpose of further study and to suggest discussion of this important subject, I beg, in conclusion, to advance the following propositions:

1. That the infectiousness of scarlet fever begins with the commencement of the redness and soreness of the throat, and ends with the completion of the stage of desquamation; and that the duration of infectiousness is variable, being often delayed in cases having mild beginnings.

2. That in a sanitary point of view, it is unwise to make any distinction between slight and severe cases in the management of the disorder. Contact in either case will surely expose the susceptible to suffering and danger, if it does not cause death.

3. That in order to prevent the dissemination of the infection, it is utterly wrong to permit any scarlatinal patient whatever to mingle with the susceptible until the completion of the stage of desquamation. As a rule the peeling process is completed at the end of the sixth week of the disease, but in cases in which exfoliation is of late appearance, convalescence is not complete at the end of the tenth, eleventh, and not always at the end of the thirteenth week.

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#### **XIX. What the State Owes to the People and the People to the State.**

The Annual Address before the State Board of Health of Pennsylvania,

By the Hon. ERASTUS BROOKS, of *New York*.

Late a Member of the New York State Board of Health.

What the State owes to the people and the people to the State is, briefly condensed, the subject of my address. The two subjects in their conclusions are practically one and as closely knit together as a common object and interest can make them. The text is that "public health is public wealth and personal health the greatest blessing that God or man can give to country or mankind." To embrace this faith we are simply to believe for both State and people that "he is a free-man whom the truth makes free, and we are slaves beside."

The only authority I have for what I may say is from sources as open to those who hear me as to myself, and as a layman they are drawn from some experience in the State, not in what belongs to the great science of medicine, but to the common sense observations of a citizen of the State trying to serve the people as a State Commissioner of Health and once in places of trust in two of our National Health Associations. It has passed into a proverb that "virtue is its own reward," and in my case, as with thousands of others, the compensation, and no other is asked or would be accepted; is the satisfaction of trying to do some good, and no evil, to the State and to the country. So much every man who can, it seems to me, owes to the commonwealth of which he is a citizen.

All the time we are learning something in science and especially in medical science. In what belongs specially to micro-organisms there was never in the past so much general study and interest as at the present time. These organisms exist in the air, in the water, in the body, in plants, in the soil, and everywhere. I am glad to know that they have their good as well as their bad side. In the great economy of nature for example, these microbes, in the nitrogen they possess, contribute in plant-life and food-life to the benefit of mankind. We know but little at best of this germ life, of bacteria, germs, and the concealed organisms in everything that has real or apparent life. But we know enough to learn more. One fact is now recorded as certain that they may and do assist nature in the preservation of our lives and in the use of our food.

#### THE FIRST GREAT OBJECT OF GOVERNMENT

is the diffusion of knowledge and the enactment of laws for the regulation of States, communities and persons; among the first of these duties are provisions of law for the safety of the people. To secure "life, liberty and the pursuit of happiness" is a principle of government older than the constitution, and as such was embodied in the first record of our national existence. It is safe, therefore, to say in the beginning of what we have to present that there can be no real life nor true happiness where the public health is not provided for by law; and that the State is only in the discharge of one of its first duties when it seeks, under reasonable laws, to maintain the chief end of its existence.

In the Congress of the United States, and in the Legislatures of States and territories, it is exceptional to find members of the medical profession. Here and there only, it is also true, are found men who unite an interest in the political and physical welfare of the State. In a certain way we all seek that "good digestion which waits on appetite," looking for "health on both." But far more than in what we eat and drink and put on and put off, we can digest our words, our thoughts, and living. Laws are digested and have been from the order of the

Roman Emperor Justinian, now nearly 1,400 years since, to the present time. In food for the body, as in light and air for the abodes of men, the work to be done is to arrange, classify, dissolve and distribute whatever in the one case is nutritious from whatever is otherwise; and in preparing whatever is put into the stomach for conversion into blood and into chyle or chyme; in the other case the work to be done is to arrange, classify, work over and distribute, for the use of others, whatever is necessary in books and letters for the instruction of mankind.

#### REDUCED MORTALITY AND GENERAL HEALTH.

To most physicians belongs the important duty which may be presented in the three aspects of reducing the mortality among the people, of saving the people from physical pain, and of curing the sick. If to do all this is not to make "a voyage of discovery" and "a circumnavigation of charity," then no such voyage can be taken in the journey of life. I know no work of equal value, nor any kind of labor calculated to promote so much human happiness.

In political governments the people are bound to seek and to enjoy, if they can, their political preferences for principles and persons. Whether in majorities or minorities one side will govern and the other side must obey. The two are essential to the welfare of the State; but while this is true there are in all States and communities, unities and necessities, more essential for the public good, and upon which there can be no safe divisions of opinion as to the proper uses of the authority of the State.

We may have diversities of opinion as to causes of disease, remedies for cure, as to climate and exposures, habits of living, the safety of buildings, the best methods of drainage, sewage, and ventilation in dwellings and work-shops; but science and experience will in time solve all these differences into some best practice or system, while in all that belongs to duty to be performed, or to neglect of duty commanded to be done in questions relating to the public health, there can safely be no divided counsels.

I place health as among the first, if not the first, in the science of political economy. It is a question which belongs to the wealth of the nation and to the prosperity of the people. The man or scientist who is capable of discovering or curing disease, and whom by custom we define as a physician, is in the established meaning of words, an experimentalist in physics and a natural philosopher. The doctor, in brief is a person recognized in law and practice, as one skilled in the art of healing the sick through the agency of proper medicines, and it is this healing of disease in its effect upon communities which covers and governs a material fact in political economy.

We know what ravages yellow fever has produced in this country and in the world, how many lives it has destroyed, how much misery

it has produced and distributed, how much wealth it has diminished. The lessening or removal of the prevalence of this calamity has been partly the work of physicians and a large share of it belongs to the nursing of liberal and intelligent men and women. This work, often a volunteer service, was inspired by the noblest motives, and has again and again, and especially in this section of the country, produced the grandest results.

The State politically, but not in the sense of party politics, and the people personally, in every sense I need not say, have the deepest interest in what is called State preventive medicine. Disease among a large class is often but another name for poverty, pauperism, orphanage and bankruptcy. In Philadelphia in 1871-72 some 4,500 people perished from small-pox. The reported loss in business here at that time, and from this disease, was \$16,000,000, besides a cash value in human lives of \$5,000,000 more. New York city was also a great sufferer at the same time and from the same cause, while Baltimore, Boston and Providence and other cities resisted the disease and prospered greatly, owing to a timely and thorough vaccination of the inhabitants.

The State imposes certain qualifications not only upon dealers in drugs, but upon physicians, before they can practice in the great art of prescribing suitable remedies for disease. A more important State duty is the enactment of wholesome laws to prevent disease. This is done without infringing upon the personal or political rights of any citizen.

The first duty is to remove the causes of pestilences and epidemics, foreign or domestic; and where these unfortunately prevail the second duty is, by vigorous administration of proper laws to prevent their spread, and put an end to their existence. When the pleuro-pneumonia came into the United States from Holland—once the great depot of this disease in Europe—and when, to an alarming extent, it was carried into England, the realm there, and the State and Federal governments here did not hesitate to act forcibly and promptly for its removal. Holland, profiting by experience and energy, reduced by inoculation, the disease to one or two per cent., and finally stamped it out. If Massachusetts and other States have accomplished a great work in preventing the lung plague in cattle, what ought not all the States to do in preventing even a worse disease in men, women and children?

A decent care for the people by the State and a decent respect for the government by the people establishes reciprocal relations that no party can neglect. The lives, health and happiness of all classes of citizens depend upon these mutual observances of duty; hence the existence of the State Boards of Health, created by law to discuss and enforce obedience to the laws passed. The law, in all its provisions, is for the common good. It is a simple application of the science of

medicine in the form of remedies or preventions to the people of the State. It teaches mankind not only the inestimable blessing of light and air and water, of ventilation and drainage in dwellings and places of business, but the absolute need of the best use of these great gifts in nature, chemistry and discovery.

#### HEALTH LAWS AND THEIR WORK.

It is demonstrated in the city from which I come that thousands of young lives have been saved yearly for twelve years and more by the enforcement of health laws passed by the State. Recent New York laws relating to the tenement-houses impart great comfort to their poor occupants and add largely to the number of lives saved.

The death-rate of the city now numbers between 27,000 and 30,000 each year, and one-third of this number of lives could be saved if the best health laws could be enforced. Eminent physicians, verbally and in their written reports, assure me that one-third or more of the prevailing sickness in town and country could be prevented by the observance of sanitary laws. Mr. Edwin Chadwick stated years ago to the British Scientific Association that both sickness and death-rates had been reduced one-third by the practice of sanitary laws, and that the death-rate in the old districts has come down to sixteen or seventeen in each thousand persons. With no over-crowding and with a proper supply of water and surface cleansing, the death-rate can be reduced to ten in the thousand, which is one-half less than the mean death-rate among the general people.

More remarkable than even this promise, but resting about upon the common sense rules of fidelity in public service—and adding, perhaps, a becoming sympathetic interest in the happiness of mankind—is the statement that in well-governed institutions for children between the ages of three and fifteen years; the death-rate can be reduced to two-thirds of the number generally prevalent, or to three or more in each 1000 children, and with a corresponding immunity from all common epidemics.

Even in the British reformatory prisons, by the careful use of preventive medicine, the death-rate has been reduced to three in the thousand, with a general exemption from diarrhœa, dysentery, typhus fever and eruptive diseases. The diseases belonging to the respiratory organs are also reduced to one-half.

The cholera epidemic, which prevailed in England in 1832, frightened the people there into the necessity of securing more of the decencies of life than had before been enjoyed. The panic of a scourge, like most other panics, prompted many of the people to put on their thinking caps, and from the consequences of the cholera came, in the course of ten, twelve and fifteen years, valuable government reports and laws.

These laws, if Dr. Rowditch be correct, are in advance of the laws

of all other countries; and one man, Dr. Farr, was the bright particular star in this work of sanitary reform, not only for Great Britain, but in many other parts of the world. If disease spreads by contagion, so also good example and benevolence inspires imitation. The great pioneers of the world in discovery and work have proved the greatest benefactors, and to the good beginnings at home and abroad we owe to-day the existence of twenty-eight State Boards of Health in thirty-eight States of the Union, and all of these have been established within sixteen years. Lord Derby long ago declared that "no sanitary improvement worth the name will be effective, whatever acts you pass or whatever powers you confer on public officers, unless you can create an intelligent interest in the matter among the people at large." Lord Beaconsfield spoke the truth for his own country when he said, as prime minister of England, six years since, that "the health of the people is the first duty of the statesman." This sentiment is at least equally true in a country of such enormous proportions as our own, and daily increasing, not only from its own inherent growth, but as the destined home of millions now in the world.

The government and the States are not asked for what so often excites and thrills the body politic by the possession of the place, patronage and power, but simply to engage in the paternal work of saving lives and promoting the health of the people. The appeal is to the common sense and practical humanity of members of Congress and of the Legislatures of the States. The motives for this needed work are of our best natures, "since the greatest good of the greatest number of people," is all that is asked.

If, when governed by such considerations, the people refuse to act, the law here as abroad must take its course, and penalties be imposed for its violation.

Nor is it enough, as expressed a hundred years ago and more by Edmund Burke, that "men *mean* well. It becomes them to do well." You are asking nothing new of the State or Government. Centuries ago the republics of Greece and Rome had their sanitary laws, and the argument then as to-day, as a part of the important work of the period, was that physical culture would secure physical health. The old Romans had their systems of ventilation, drainage and sewerage, their splendid aqueducts, baths and pavements, and all of them promoted the comfort, and convenience of the people. Sanitary law also was a part of the Mosaic law, and in practice better at times than the customs in our own American towns and cities in the closing years of the nineteenth century of the Christian era.

Among the lost arts and blessings of mankind unfortunately were the lost codes of the law relating among other things to the public health. The code of Justinian and the laws of Lycurgus, with the laws for justice and health went into decay, and for a thousand years and



and more books and learning, and in a certain sense, deeds of practical charity were confined to the monks.

It was a long forgotten lesson among general teaching that "cleanliness was next to godliness," and therefore a very close neighbor to all kinds of practical piety. Hence, clear up to and far into this nineteenth century, came agues, malaria, small-pox, cholera, scurvy plagues, and pestilences, and all the inherited ills of life to which, from negligence and ignorance, flesh and blood are exposed. Happily for the world, public opinion is now more aroused than ever before in the interest of the public health, and the subject reaches us in the threefold of economy, thrift and morals.

If, as alleged by way of criticism, the health service is costly, it can be proved to be the best possible investment to meet the cost. We began in the New York State Board with an appropriation of \$15,000, and it may be more or less hereafter. The City Board of New York asks for the year 1887 the sum of about \$275,000 and now for general work \$20,000 and has money well invested in buildings and institutions. In saving health and lives it will save more for the city, in income and taxes, than any general investment of skillful financiers. If to this result the money value of life is counted, the five or six thousand lives yearly saved will run into millions of dollars. In Great Britain they place this kind of a value on human existence, just as we say in the United States that the cash value of every able-bodied immigrant from the Old World is \$1,000. There Dr. Farr—perhaps the highest authority in the Old World—placed in his report as the registrar-general of the government, the money value of each man, woman and child in the United Kingdom as \$795. The neglected preventable deaths in England and Wales during the school period, apart from infant mortality, makes a loss to the State of \$95,000,000. The estimated value of lives lost in the cases of preventable deaths was estimated at \$200,000,000 in a population of fifty millions of people in the United States alone and the people now number nearly 60,000,000. The British life insurance companies and friendly societies also give the money value of work lost by sickness. For every death there were, as proved on a careful investigation by the government, two persons sick and disabled, thus making a loss for each death of 730 days in each year. This result is reached by placing the minimum of the entire population at the sum of \$795 here named, and to these figures are added 50,000 lives annually in the school age in England and Wales alone, which might be saved. But such statistics are exhaustless, and I must leave them for more practical conclusions.

In considering the subject of State law and personal work it will be wise to recognize the principle in regard to disease—especially is this true in cases of quarantine—that it is not places, but *principles* which secure public health. This rule applies alike to the ship, the shop and the home. Ship fever, under proper treatment and practice, has be-

come what Dr. Vanderpoel called almost a mythical disease, and by simple cleanliness is now easily mastered.

Cholera latterly has been the one disease most dreaded because it is very insidious in its visitations. It comes to us specifically in old clothes, worn or concealed, in tangible filth, capable of removal by proper disinfectants or in unventilated trunks, garrets, bundles of imported rags, sinks, cellars, yards, cesspools, and in like combinations and accumulations. Whatever may be said of germs or poisons in the human body, the conviction is that outside the human body there are, as a rule, positive preventives of cholera, in thorough cleanliness and care. Panic is a public enemy, and almost a personal crime in the effect it has upon timid minds and on persons afflicted by infirmity or disease.

This and all States may, by proper warning and timely action and enforced temperate living be ready to meet this common enemy when it appears, and preparation for possibilities is alike a public and a private duty. It is possible for science to detect causes and remedies for cholera, and by the aid and blessing of Providence it is also possible for human skill to diminish, if not destroy, this dreaded disease. The filthiness of Paris, is a warning to the people of the United States, and there are places in my own city, probably in your own State, where the waters are a source of pollution, and where the streets, alley-ways, yards and houses abound in filth.

Every citizen in his own State, his own home and place of business, may be a practical sanitarian. In the four cholera visitations at New Orleans, between 1832 and 1855, the deaths numbered 51,300. This warning after a long time proved the necessity of sanitary organizations to meet and fight the disease if it came again. Whatever the causes of this evil, duties are made so plain that they must be enforced.

What the cholera has cost Europe in life and health is beyond human calculation. The known fatal cases in Italy alone during the visitation of 1884 to first of November, 1884, numbered 14,928. In Naples there were 6,629 deaths; in the province of Naples 14,137 cases and 7,576 deaths. In money the cost, chiefly from terror, is placed for the continent of Europe for ten months at nearly \$25,000,000. Its introduction into Paris last year increased the alarm, the mortality and the suspension of business. It returned to Paris in November, not without warning, but the warning was unheeded until the disease appeared in Paris. In Spain the disease was more wide-spread than in Italy. As a present warning to the United States it may be stated that there was no timely inspection of unhealthy dwellings or hospitals though cases of cholera were found in Paris in June and July.

To show the necessity of calmness and promptness in the kind of work to be done it is proper to state that during the summer, and first

autumn month in Italy, the number of cases reported was 19,762, and the number of deaths from cholera 9,824. In France and elsewhere the epidemic in Paris proved to be the real Asiatic cholera.

Cholera, though not mastered by being stamped out in the same way, is often under control, and its spread into towns and States along the coasts and rivers can be prevented. It comes at first from importation. Importation, if need be, can be forbidden, and by law and care its spread, if it should come, can be prevented. When in 1832, 1848-49, 1854, 1865-66, it entered the United States and Canada, it moved as fast as travelers could be borne by steam to the far West and left its footsteps of sorrow all along the road from New York and Quebec. So also in 1848 it entered New Orleans from Havre, and forced its way along the Mississippi reaching towns and cities 1,000 miles apart, and surviving the winter, it pursued its ravages over land and water in 1849-50. Had the United States, or Louisiana alone, possessed power now given under existing laws, no such disaster could have occurred.

Sanitary laws properly executed, I need not say have prevented and can prevent, the spread of cholera. The law, must be supreme, and not only supreme but cover districts, precincts, towns, counties, States and governments even to the interposition of international authority. There must be the *cordon sanitaire*, as along the vast frontiers of Russia, and maritime law in the hands of faithful officials, and these officials must be sanitary officers, as we have seen them upon the Red sea, the Mediterranean, at Medina and Mecca, keeping back and pushing forward the hundreds of thousands of Musselmen pioneers and herders, who, but for the law and its vigilant observance, would bear disease and death wherever their footprints are found.\*

What John Stuart Mills calls "the limits of the province of government" we must agree, whether spoken of the State or of the citizen, excludes no good work. It may and should exclude all needless forms of non-intercourse common to the middle ages and in later periods of time, and all oppressive methods of administration, as when petty despots govern the people; but whatever is needed for absolute good of the people in establishing and maintaining the public health must be performed. If the law is bad repeal it because it is bad, or amend it until it is wise and timely. In New York we have a compulsory law requiring vaccination, but it is almost a dead letter except in single cities, and vaccination is generally reduced to deeds of charity

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\* In England and Wales the death rate has been steadily reduced for ten years and much more in the last five years than in the first. The registrar-general points out more than 281,000 persons surviving the last five years whose deaths would have been recorded had the mean rate of mortality been equal to the ten years, 1871-80. The effect of longevity has been indicated by Mr. Noel Humphrey, who states that the reduction in the death rate from 22.5 in 1838-54, to 20.8 in 1876-80 added two years to the life of every male born, and three years and a half to that of every female.

or to simple individual volition, even when the public welfare requires obedience to the statute. It is the cost to the State that some people complain of, but as a question of State economy I hope I have removed this objection. The real State cost in all the United States at present is less than \$5,000 for each million of inhabitants, and the saving covers the cost ten times over. The civil war is reported to have destroyed 1,000,000 persons. Sickness wastes more than war—20,000 a year in London and 120,000 in the United Kingdom, and if recorded figures from medical men are true, the equivalent of 700,000 years of individual human life are lost by neglect among the 500,000 of people in the State of New York and 75,000 years of human life are also wasted every year there by sickness, and New York is not worse off than other States of the Union. The life average falls short ten years each of what it should be. So in England also we read the important truth that in healthy districts of the kingdom persons who reach the age of twenty years pass on to the fair age of three-score and three years and nearly a half; while in the general districts death comes within forty-five years. The annual money loss of this single death record, coming from ignorance, neglect and crime, is stated at nearly \$50,000,000, besides the loss from impairment of health and from poverty among those not positively dead, for to each death there is an average of twenty persons who are sick.

When it is known that in small-pox, isolation and vaccination provide the cure for a loathsome disease, the existence of which is concealed where it notoriously is, the law or its officers are at fault. When it is also known that bad air produces bodily and mental disease, and that proper ventilation, heating and water supply are remedial measures, it is the duty of the law, put in practice, to point out and remove the evil. The law, in some of our cities at least, prescribes where houses shall be built of brick or stone only, and if it is a wise law, may not the construction and drainage, sewage of lands and workshops also be regulated by law? Mr. Edwin Chadwick says that by following out a correct principle three houses may be well drained at the present cost of one. Mr. Edward Atkinson, also good authority, declares that unsafe buildings cost more to construct than fire-proof buildings. It is proposed in England to guarantee dwellings as safe to live in on the score of health, and simply by evidences of proper construction and drainage. When sewer air poisons the blood and produces diphtheria, dysentery, and malaria in other forms, who shall condemn any proper law to prevent poison and self-inflicted murder? So in regard to adulterations of food. Take, for example, the simple article of candy, much of which is reported to be made from grape-sugar, glucose, and "terra alba," the latter being sold at one cent a pound, and the former at four cents a pound, where granulated sugar costs by the barrel ten cents. The cheaper candies may

be impaired by impurities, or depreciated in value, from fifty to seventy per cent. It is a public duty to resist all impurities, both in the food we eat and the water we drink, and in the contaminated air we breathe, in all dwellings and all workshops and in all that is around them; and let me say in speaking, alike for State and citizen, that "*obsta principiis*" is the only safe rule of action. When the people of Great Britain discovered that more than one hundred articles were adulterated, the British Parliament as long ago as 1815 passed the best law extant, and since known as "the Sale of Food and Drugs Act."

This subject addresses itself to the hearts, minds, and bodies, and estates of every man and woman in the land. The real wealth of a nation is counted not in the mines of gold and silver, nor in the more useful metals of iron, lead, copper and tin, nor yet in the millions of acres of land cultivated by between five and six millions of our people; nor in the work produced by half this number of persons employed in the manufactories and workshops of the people; nor yet alone in the treasures brought up from the depths of the sea, or borne upon the two oceans which surround us; nor from or upon our grand lakes and large or limited rivers. These are grand and stupendous sources of material wealth and physical greatness. But, as far above them all as the heavens are from the earth, as a simple question of value, is the general health of the people. Here alone is true manhood, real civilization, the source of contented life, peace and rest in the family, pervading happiness and substantial good-will among men. Here alone the personal man is the true temple of the undying soul, and only the purified abodes of men are fitting habitations for this vital principle.

We sum up, then, the duties of the Federal Government and of the State, in the following order:

1. Supervision over the health of the people; peaceably if it can be done, forcibly if necessary. Where the Federal Government has authority, as upon the sea, lakes, rivers, over forts and arsenals, over army and navy, in legislation for commerce, international, inter-State and internal, especially in regard to infected vessels, over animals exported and imported, this authority belongs to Congress. It has been proved, I think, after the most laborious investigations for nearly two centuries past in this country, that the epidemics appearing among us have been traced to importations. If epidemics in this and other cities seem to disprove this fact, the seeming exception is due to the bad sanitary condition of the localities named, or to the fact, as stated by Dr. Vanderpool, to the germs of disease concealed and dormant in some cellar or room not reached by the purifying air of heaven in the place where the disease exists. The port of New York for four months of the year, is as much exposed as New Orleans to yellow fever, and it is kept from New York, not by non-intercourse but simply

by the practice of correct principles of quarantine by vigilant and capable officers.

There has been no national interference in New York as in Louisiana, because the State system in New York was and is so complete that the Federal Government acknowledges that with us the State system is about as perfect as it possibly can be. I hope it is as efficient in the port of Philadelphia.

2. State governments are clothed with power over the health of the people within their commonwealth, and over the territory where the Federal Government is without this kind of jurisdiction. The colleges and schools of the State, its institutions of charity and learning, its prisons and reformatories, its codes and laws, all that belongs to roads, avenues, parks, canals, docks, piers and even the public and private dwellings, when legislation is needed for health, belongs to the parental care of the State. Epidemics are to be treated like public enemies, and often they are worse than armed foes because more insidious and often beyond observation. They come in foul sewage, polluted streams and wells of water corrupted by cesspools and closets. They come like a thief in the night and steal away those jewels of the household, the little ones, whose lives are more precious to their owners than all the wealth of the State. To prevent adulterations in food and drugs—not practiced, I hope and believe, to the extent reported or suspected—is another State duty.

To clothe boards of supervisors and trustees in towns and villages, mayors, common councils and health boards in cities, not only with ample power in regard to health, but to require them to pass and enforce ordinances, is a positive duty of the State. A State bureau of health is essential to secure these results, and its action must be impartial, effective, vigorous, determined, and take no step backward.

3. While Federal and State governments are bound to do what is here suggested, a higher law of duty rests upon the woman of the household and upon faithful men of business. When a woman suggested the first board of health in the State of Massachusetts, the appeal only came when typhoid fever was discovered in a seminary of learning at Pittsfield. The State cannot secure obedience to law without the sympathy and coöperation of the people. Light and air, cleanliness and order, are the great preservers of health, and the wives, mothers and daughters, as the necessary mistresses of our dwellings, can best serve the State when they secure the greatest possible health in their own homes. Dr. Farr prescribes the right remedy when he says that "health at home is health everywhere," and when he adds, as his conclusion from experience, that "the whole future sanitary movement rests for permanent and executive support on the women of the country." If it be true that "the predisposing causes of insanity of the United States can be traced to malign influence on childhood," no wonder we had from Dr. Wilbur, of New York, before

lamented death after a most useful life, the startling record that there were 50,000 lunatics in the country, or that we are behind England, Germany and the age in which we live in our treatment of this class of unfortunate people.

4. A word as to quarantine. Commerce cannot be forbidden; but it may be regulated when hurtful to health. At best, however, State law is only a relative guarantee of the public safety, and sanitary instruction, if heeded, is more important than sanitary legislation. Quarantine and commerce are natural enemies, and the State must regulate the relation between the two—the State always insisting that as far as possible the public health, within its borders, shall be permanent. Every nation and every State has the right to use intelligent ways and means to preserve health in and over all its borders, and the Federal Government also has rights which must be respected, and laws which must be obeyed. There are natural, legal, wise and conservative lines between nations, States, municipalities and towns. Where the death-rate in England is 19.9 in the 1,000, in Austria, 31.3, and close on the latter number in all parts of Italy, and where, as in the United States, four lives in each thousand of people are absolutely wasted, official action is demanded in the name of public safety.

Your city of Philadelphia, next to London, where the mortality has averaged nineteen and a fraction, (here twenty in 1,000 each year,) is one of the fortunate large cities of the world for causes I presume, amply discussed in your report. You have not, as in New York, 23,000 tenement houses and more; your population is not of alien birth and habits of life.

I have spoken of the unities of the State with brief space left to name the duties of the citizens to the commonwealth.

Among our first duties is to aid, protect, support and uphold the State in the performance of all obligations to persons, communities, institutions, organizations and legal authorities. To this secular obligation of common duty may be added so much of that higher law which, quoting the words of Tillotson, declares that "religion obliges men to practice those virtues which conduce to the preservation of our health.

"Daily duties, paid hardly at first, at length will bring repose to the sad mind that studies to perform them."

With this text, permit me to give the reason for the faith that is in me, trusting that we all may be able to practice the sentiment of one of the poets, that in real life

"The primal duties shine aloft like stars."

If then the State owes order, law and protection to the citizen the citizen owes to the State, in return, allegiance and self-preservation to himself and to those dependent upon him. The State provides

schools for the young, hospitals for the sick, asylums for the deaf and dumb, for the blind, the idiotic, the insane; and poorhouses, reformatories, jails and prisons for the unfortunate and vicious class of people. The greater or lesser number in the several institutions and places depend upon the causes and conditions of those sent, or sentenced to occupy them. The State performs its duties when it provides needed comfort for the absolute poor, and needed punishment for absolute criminals. All beyond this for securing public or private good belongs to personal and responsible administration; and this is true whether the subject relates to institutions or families. Citizens make the family; families make the State; and States and Territories compose the general government. The safe beginning will, as a rule, always make the safe end. In the State we are not only to enjoy life but to live nobly.

Aristotle most truly said that it is only by labor that thought can be made healthy, and only by thought that labor can be made happy, and the two cannot be separated with immunity; where both are best preserved the State life and the life of the citizen will be most secure. Whoever stimulates research into questions relating to the health of the people, secures as the first fruit of that research a knowledge which benefits mankind. This knowledge born of observation produces the experience which comes from observation. One of the first lessons thus learned is that governments best represent the people, and only represent them when those in power maintain what is wise and good, and provide punishment for what is dangerous and vicious.

The State in this sense is a civil power, a political power, a governing power of the many by the few,—the many consenting to this form of government, which means the body politic, united and organized to establish and maintain the rights, interest and welfare of the people. In a limited sense such a government is a district, a town, a county; and these grow into a commonwealth. In a larger sense, it is a league, a confederation, and that form of federal power which most of us now call and respect as a nation. This is the imperial power of the body politic, united for all the purposes set forth in our constitutional form of government, and from which, short of revolution, there can be no dismemberment.

The first duty is the safety of the republic, and the second, like unto it, is the promotion of the six great precepts set forth in the preamble to the Constitution, and this is true of the public health which is necessary to all domestic tranquility, to all that belongs to the general welfare, and I may add, to justice, in the proper presentation of what is due to the people from the State.

I present this branch of what relates to popular government and duty as of the highest importance to the country and to mankind. Therefore, let the public school room, academy, college and university impart what is due to the State in return for what the State has done



for them and is always doing for its children. These duties defined mean sanitary inspections of schools, by competent local boards of health and of all public institutions. Among the discoveries to be made are the causes and effect of those terrible diseases diphtheria and scarlet fever, and of all the emanations from malaria and blood poison. Inspectors, teachers and parents to arrest diseases like these owe service to the State. To ensure non-communication, isolation, safety from exposure to draughts and colds, strict avoidance of impure water, disinfection when required of clothing, rooms, workshops, dwellings, and of all exposed places; the special personal cleanliness of all who suffer, and of all in attendance as nurses or otherwise. Where fire or heat are not applied to get rid of what is offensive, fumes of sulphur, copperas and other effective disinfectants must be used, and when death comes let there be no public or family funeral. "The dead," if need be, "must bury their dead." To save the lives of the living by such means shows neither want of sympathy for the dead nor for the living, but just the contrary.

#### SUBJECTS TO BE LEARNED WITHOUT DIRECTION FROM THE STATE.

I have seen nearly 90 per cent. of children, under two years of age, die in New York city public institutions, and I have seen the lives of children of the same age and the same dependence and condition, where less than ten per cent. of the whole number have died in the country nursery and hospital, and not over twenty per cent. in the city nursery. In both town and country the good and bad results came from good or bad administration, and the good as a rule has been, and always will be, chiefly directed by voluntary service. Half as many persons die from being over-fed as under-fed, and the waste of life and the want of health in cases like these—which may be counted by thousands—is born of ignorance and indifference, for which the State is rarely responsible.

The brain, next to the stomach, is to be properly cared for to free children from diseases, known as fear, fright, hysteria, St. Vitus' dance, and kindred diseases, caused or suggested by unwisely directed advisors or educators. Let not wisdom linger when knowledge comes, always remembering, for young and old, that where there is cure by preventive care there need be no cure by medicine.

What are called domestic pestilences—such as scarlet fever, diphtheria, measles, whooping-cough, and even small-pox—are largely preventable diseases, and the remedy is, first of all, personal care, and, secondly, the proper use of what belongs to the atmosphere of the locality. As vaccination is the preventive of small-pox, the reasonable logic is that every man, woman and child should be vaccinated. Diphtheria, with all its mysteries, is shown to be the result of local conditions, whether propagated by a microscopic plant or fungi, from which no one is exempt, and which exists in the mouths or throat of

all of us, but with no power of reproduction until it receives fresh vitality from the disordered conditions of the mucous membrane attending sore throats produced by colds. It is a blood poison in the very sources of human blood, and even in the spleen and bone marrow. The poisoned plant extends to the blood, when diphtheria sets in, and the disease goes out spreading through all possible surroundings. It is declared to be possible, if existing theories hold good, to kill this human monster by artificial vaccination, and it is at least more than possible that this terrible disease may be modified, if not removed. But as it now is, even the convalescent may communicate the worst infection; and hence the necessity for domestic purification.

We read daily how and where impure water has produced (perhaps it should be said aggravated) diphtheria and scarlet fever.

In Memphis we have seen the most striking examples of wise and unwise administrations of the people. The change for the better only came after immense suffering and distress; but after it came, it inspired more than a thousand towns in the country to follow one good example. The wrong done increased the mortality to a small population, or from 29 to 30 in each thousand, to 144 colored people and 92 whites. Proper sewerage or drainage, pure water, the closing up of cesspools and vaults, restored ordinary mortality, and the cleansing of the city reduced the death-rate two-thirds. In 1879 the population was reduced to less than 5,000 whites, and in all to little less than one-half, with a corresponding reduction in the value of every kind of property. Half of the buildings with basements and cellars had no proper ventilation. Of 4,744 wells and cisterns, 3,408 were near privy wells, and in 6,000 of these apartments not 2,000 were properly built. And just here, and all through the country, may we find the worst enemies of health and of life.

The National Board of Health, by proper remedies—aided in their good work by the best people—reduced the death rate 20 per cent. in a single year. By a like sanitation the lives and health of very many of the people of Charleston, Mobile, Galveston and Jackson were saved.

The economy of a work like this means, in time, money and work, millions upon millions saved in property, to say nothing of life and health. Of the deaths in Memphis, 15 per cent. were traced to undrained soil and to deficient sub-ventilation in the homes of the people, while 57 per cent. of the total evil came from external causes, and most of all these were preventable by care.

#### PREVENTABLE DISEASES.

The death rate in India, by the use of sanitary means to prevent the source of cholera alone, was once reduced from 22.41 to 3.29, and later to 1.26. Proper sanitation has reduced the death-rate 6

per cent. in Liverpool, 3 per cent. in Manchester, and in London from 1,100 in one million, to 400. Sanitation in London has also been reduced in the death-rate from 43.5 in 1685, to less than half this rate in 1880.

#### FACTS FOR PERSONAL KNOWLEDGE AND REMEDIES.

1. Carefully studied records show that typhoid fever is due to a specific poison, often producing disease, conveyed into the human body through the agencies of bad food and polluted air, and, in many places, by bad well water, coming from cesspools and like exposures. Sewer digging is another serious source of evil.

2. Scarlet fever and scarlatina may be diminished, if not stamped out, by proper exclusions, and restrictions in schools, families, and among large bodies of people collected together. Not alone the personal presence, but even clothing not used for a year, has produced this disease.

3. Diphtheria once started increases in proportion to the neglect of sanitary conditions. Decayed vegetables, fruits, and perishable fruits and products, if neglected, mean disease; and especially is this apparent where the soil is moist, as near swamps, marshes, and immovable bodies of water. Eighty per cent. of the worst cases were found at Lynn, Massachusetts, during the worst year of the disease in that locality. Even the kissing, or the breath of a friend, may communicate diphtheria. The soil needs watching whenever this and kindred diseases are found. Malaria is always most prevalent near the surface. On the marshy district of an infected town on Lake Michigan filth has been traced through the ground over one hundred feet. Where it is the least visible, it is often the most penetrable. All malarial and miasmatic fevers revel in extreme moisture.

Children are the first victims, and children can communicate diphtheria to strong mothers and stout fathers. Sometimes this disease comes from natural conditions, but more frequently from positive filth. Surfaces of mud are a part of this filth, and the sun and air may stimulate it. Though this disease is comparatively new in name, it was christened at Tours, in France, in 1818, and is even described by Hippocrates. The new facts seem to be its propagation in the form of microscopic plant.

4. Water used for drinking needs watching, and an analysis, where there is doubt or ignorance of its source or supply, is required. The transmission from wells, brooks, and springs to dwellings also need watching. Even ice, with the pure surface, may be contaminated where the water is not pure. Polluted waters are rarely detected by touch, taste or smell, and only chemical and microscopic examinations can trace the real sources of soil. Surface wells are dangerous

and sub-soil wells are undesirable. Rain water is the best of all for purity. Boil it for thirty minutes and the worst enemy is gone.

5. Sewerage is another public enemy. Sulphuretted hydrogen and ammonium sulphide are found in our sewers, creating organic fetid vapors; and these, if not wholly decomposed, make them fatally foul. Even one part of these gases to two hundred and fifty in the common atmosphere, it is said, will kill a horse, and double the quantity a dog, and only six parts small birds.

The schoolmaster who teaches pages of grammar, books of arithmetic, and the higher mathematics, chapters of logic and volumes of history and literature, should be requested to teach more of chemistry and physiology, of anatomy and hygiene, and even the principals of life insurance may be taught wisely and timely. The common schools and academies teach practically little or nothing of these subjects, and our colleges and universities but very little.

One other source of health, depending more upon the people than the State, may be traced to tenant homes, homes such as have been partially begun in New York (and where 2,478 deaths took place as certified to by the coroner without medical attendance), in Brooklyn, and more extensively in England, as described by Sir Sydney Waterloo, M. P., when visiting New York, and a philanthropist who has given many years to tenement-house reform. In 1854 he sought to secure, in the humbler homes of the people, immunity from disease, by inspection and safety from fire, and the effect of this little more than individual effort was to reduce the average death rate from forty to eighteen in each thousand persons, and the rate of insurance, on properly built tenant dwellings, to seven cents on each \$100, with a small rental for each comfortable room during the time of occupation.

—*Peabody.*

The homes of the people are the real sources of happiness, and what is best for health should be established and recognized there, and in properly constructed and regulated workshops, school-rooms and churches. In the latter physiology and physic may at times enter into that divine philosophy which teaches the ways of God to man, and in the very front rank of this intelligence should be the duty and wisdom of creating, establishing and maintaining the health of the people.

The work of Florence Nightingale in England and the Crimea, in peace and in war, in the hospital and in the camp, shows what one woman can do to save life and relieve suffering. In a like spirit, in a different field of labor, but inspired by the same divine thought, Octavia Hill, in London, possessed for long periods of time various pieces of tenement property, each one wretched in itself, and worse in the character of its inmates, and, as a lessee, visitor and friend, cleaned and repaired, made habitable and comfortable, all these hitherto miserable dwellings. In the same spirit a committee of benevolent

ladies, to the great saving of health and life, have in charge as many as possible of the more than twenty-three thousand tenement houses in the city of New York.

I read of the lives of 10,000 children saved in a short time in England, simply by the proper care in the use of the gifts of God to man. These agencies have been the medicines of nature, air, water, and, care, prescribed by a little practical wisdom. I read also in thirteen towns of England of a decrease of more than 17 per cent. in the death rates from proper sewerage alone; but there, as here, there remains immense room for improvement. In a country like Belgium, the average lives of the cleanly and thrifty are fifty years, and of the filthy and negligent, the average length of life is only thirty-two years, and Belgium in this respect is not a peculiar country.

I leave it to experts and to the doctors to be specific as to the origin, character, extent and definition of diseases. As a layman I see and comprehend the effect they have upon organized communities, people, and individuals. I know what foul air, impure water and bad food mean, and I would, if I could, remove them from all conditions of household and animal life. Yes, and I would, if I could, remove them from the face of the earth. I try to distinguish between abnormal decay, common to human existence, and the decay which comes from disease. Science and art long ago banished from the world the wholesale pestilential loss of life in what was called the disease of "Black Death," and "Sweating Sickness." They killed more than great wars.  
—*Canaro.*

The study of chemical combinations, of biological conditions and of epidemical relations, as a layman, I may not understand; but every one can comprehend what an epidemic is, and if he can trace it to foul water, to exposed cesspools and other tangible offenses, the way is pointed out to remove the cause and to remove the evil. The sick animal and the sick plant, and whatever causes or enters into the decay of man must be cured, or the natural consequences follow.

As the proverb says, "An ounce of prevention is better than a pound of cure." Even the brute creation, as in the marshes near Rome, have, through experiments, shown symptoms of malaria produced by infection of the soil and air.

Dr. Billings states that 100,000 lives are lost each year from sheer neglect, and 200,000 cases of prolonged sickness are added during the same year. In reality the dead and the sick, who might be saved, are far beyond these figures. The greatest loss is during the age of childhood; but neglect, ignorance and vice spare neither age, condition nor sex in any of the years of our lives. Death-rates are among the important studies in sanitary science; because, first, they give a very sensitive test of sanitary conditions; and, secondly, the places where they are most apt to die are necessarily the places where survivors are most sickly, and where, if they survive, they beget a sicklier brood

than themselves, even less capable of labor and less susceptible of education. A high local mortality of youth must always necessarily denote a high local prevalence of the causes which determine a degeneration of race. Dr. West says the frail child never passes completely into womanhood, but fades and droops in the transition stage through which she has not the strength to pass; and this is the sad record of advancing years. We know from experience, how in the State, pauperism may be perpetuated in the double form of immorality and disease.

The birth-rate, it may be interesting to state, is largely in excess of the death-rate, or 36 in 1,000; and the annual increase of births over deaths numbers 878,572.

In contrast to the sad records (many before me) let me say that, upon the whole, the health service of the country, and of the world, is certainly improving; but while this is true, it is necessary to add that, as an entire people we are only in the beginning of the required work of real civilization. The death rate in the United States army from all causes is but nine per thousand of white men and twenty per thousand of colored troops.

In my State I record with satisfaction that since the establishment of the State Board of Health, local boards have been organized in twenty-four cities, nearly three hundred villages and in all of the nine hundred towns of the State. The cause of this improvement is due to the fact that physicians in many of the counties of the State, supported by boards of supervisors, village trustees, county, town and district clerks, and, indeed, by nearly all county officers, have been requested to coöperate with the State Board of Health in maintaining public health at home, and to this end they were asked to respond to any and every call looking to private and to public works for the consideration and discussion of measures relating to drainage, sewerage and general cleanliness; to the ventilation of schools and public institutions; to supplies of pure water; to the proximity of wells to cesspools; to the adulteration of food and drugs, as affecting health, and to all general work which seeks to secure the health of the people. Work at home, as the best missionary field of labor, is the first improvement needed. The best work always begins there.

When, many years ago, Lord Palmerston met his Scotch petitioners, asking for a day of fasting and prayer, he gave them the wise but rather startling answer: "Go home, and see that your towns and cities are freed from those causes and sources of contagion which, if allowed to remain, will breed pestilence and be fruitful in death, in spite of all prayers of a united but inactive people!" And Ruskin, at a later day, declared that "any interference which tends to reform and protect the health of the masses is viewed by them as unwarranted interference with their vested right to inevitable disease and death." And this amiable cynic induced Octavia Hill to invest ten thousand pounds

sterling of her money in the lowest quarter of the city, where she might witness the transforming power of its worth in sanitary reform. And so this noble woman, aided by Ruskin's money, proved that wealth is health, and that health means the happiness of the people.

In this spirit, Ralph Waldo Emerson, many years ago, in his words on "One in Robust Health," said, in a spirit which I have endeavored to inculcate: "The first wealth is health. Sickness is poor spirited; it must husband its resources to live. But health answers its own ends, and has to spare; runs over and inundates the creeks and neighborhoods of other men's necessity."

Let me prescribe one other rule of business, and for domestic and public duty; banish from your dwellings all possibilities of contamination from effete matter, all noxious and miasmatic gases from fecal decompositions resulting from soil and sewer pipes. Obstructed pipes send back into your closets, sinks and basins the foulest odors, and only the freest flow of water can keep them clear and clean.

If the sources are all pure and the road straight and clear, there is a way of escape. The head of every house and building should be practically a health inspector. Open the doors and windows of your dormitories and school rooms that the sun and air of heaven may enter therein. A little care will shut out filth and darkness and make room for the light and the vigor of health.

One marked feature of our American life is the disease known as fret and worry. The haste and zeal of the times causes what is called "American nervousness," which means mental and physical derangement, and which, in turn, again means what has been characterized as hypotism, hysteria, catalepsy, somnambulism and other preternatural and abnormal manifestations and hallucinations, as seen, in part, in Guiteau's villainous purpose, whatever the measure of his alleged insanity, for killing President Garfield. Some of these evils are born of deceit, passion, vanity and imposture. Others are born of intemperate lives and habits and education, and produce insomnia, dyspepsia, irritability and a long train of nervous diseases, or disorders, characteristic of the times and the people. These are the diseases which lead the way to asylums for the idiotic and the insane, where it is so hard to—

"Minister to the mind diseased,  
Pluck from the memory a rooted sorrow;  
'Rase out the written troubles of the brain;  
And, with some sweet, oblivious antidote,  
Cleanse the stuff'd bosom of that perilous stuff  
Which weighs upon the heart."

The only offset to this amount of fret and worry is a corresponding reduction of inflammatory diseases; and this secured is almost, if not quite in proportion to the growth of nervous irritability, with a corresponding increase of longevity when disease is most apparent.

But leaving all these specific references to life and death, disease and cure, let me close with a single reference as to the duty of the

citizen and the State, condensing both in one: "Duty is a moral obligation imposed from within; obligation is a duty imposed from without. Duty implies a previous obligation; and an obligation involves a duty. \* \* \* My obligation is to give another man his right; my duty is to do what is right. Hence duty is a wider term than obligation. Duty and right are relative terms. If it be the duty of one party to do something, it is the right of some other party to expect or exact the doing of it."

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## XX. Remarks on Vaccination.

By W. M. WELCH, M. D.,

Physician to the Municipal (Small-pox) Hospital of Philadelphia.

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I risk nothing of truth by asserting that of the innumerable advances in sanitary medicine, from the time of Hippocrates to the present, the discovery of vaccination is the most important of all. No other single discovery has been the means of mitigating so much suffering and of saving so many lives as that of Jenner; and his name, therefore, deserves to be placed at the very head of the long list of benefactors of the human race—a class of men which the world too often forgets to honor.

Jenner's attention was first called to the subject of vaccination by hearing a country woman remark that she could not take small-pox because she had had cow-pox. Upon investigating the subject he found that milkers of cows not unfrequently became infected by an eruptive disease which appeared on the udder of the cow (a disease evidently more common then than now), and that to such persons it was impossible to communicate small-pox by inoculation. He thus began to study scientifically this traditional belief of the country people of his neighborhood as early as 1776, but on account of the opposition and ridicule with which his theory was treated, even by the most eminent men in the profession, he did not venture to do his first vaccination on man until 1796: He then clearly demonstrated the fact that cow-pox once communicated to the human being may be transmitted from that person to another, and so in endless succession. In 1798, Jenner published his first important paper on vaccination; this paper, though I regret to say not often read, stands to-day a highly interesting and instructive treatise on that subject. In the year 1800, the "new inoculation" (as vaccination was then called), was introduced into France, Germany and the United States. It may be interesting to a part of this audience to know that vaccination was first successfully performed in Philadelphia, November 9th, 1801, by Dr. John Redman Coxe.

In the short space of time at my disposal I cannot stop to consider



the various methods of performing vaccination, or even to describe the course of true vaccinia, important as these topics are, but must hasten to discuss very imperfectly a few of what I conceive to be the more interesting and attractive questions connected with this subject.

The introduction and extensive progress of animal vaccination in this and other countries within the last few years, very naturally suggests the question, both to the profession and the public, what is the comparative value of bovine and humanized vaccine virus? I have studied this question very carefully, and have no hesitation in saying that there is really no difference between the action of bovine virus and that of recent humanization; but between the action of either of either of these viruses and that of long humanization, there is a very marked difference. Vaccinia induced by animal or recently humanized virus requires for the fullest development and completion of its course not less than twenty-one, and frequently as long as twenty-eight days—counting from the time of insertion of the lymph until the falling off of the crust—and is sure to be followed by an indelible scar, distinct and well-defined as if stamped by a sharply-cut die. On the other hand, vaccine virus far removed from its original source induces a vaccine disease of much less intensity and of considerably shorter duration. The scar also differs in a corresponding degree, being much less distinct and often quite uncharacteristic.

In 1836, when the cow-pox of Passy was discovered, there was found to be a very great difference between the course and duration of vaccinia, resulting from the use of the new virus, and that of the old; the latter at that time represented thirty-eight years of uninterrupted human transmissions. In 1844, after eight years of humanization of the Passy stock of virus, it produced vesicles which ran their full course in three days less time than when it was first discovered. The vesicles of the Jennerian stock of virus, after thirty-nine years of uninterrupted human transmissions, were found to undergo desiccation in twelve days, instead of seventeen, which is the standard period, losing in that time five days of their maturing period. The late Dr. Martin, in one of his very valuable contributions writes that, in 1859, he obtained from Ceely a supply of long-humanized lymph which he continued to propagate for several years, and that the course of the disease induced by this virus was usually eleven days, counting from the time of insertion until the crust would fall off, or could be readily removed. He also says that for nearly ten years he propagated virus which he received from the National Vaccine Institution of Great Britain, and that this virus induced a disease, the duration of which was fourteen days, very exactly, from insertion till the fall of the crust. When a public vaccinator in this city, from 1867 to 1870, which was prior to the introduction of animal vaccination in this country, and the stock of virus in use doubtless being the same as that from the National Vaccine Institution of Great Britain, I found it necessary,

in order to collect crusts for further use, to visit the persons I vaccinated not later than the fourteenth or fifteenth day after inserting the virus; if I delayed my visits to a later day my harvest of crusts would prove very scanty. How different is all this from our experience at the present time! The virus now in general use is either bovine or not many removes from the animal, and I am sure we will all agree that, in the vaccinations of to day, it is impossible to remove the crust, without doing violence to the arm, earlier than the end of three weeks, and frequently not until the end of the fourth.

My experience leads me to assert most positively that vaccinia of short duration is capable of destroying in a person the susceptibility to small-pox. But whether the protection it asserts is as durable as that which results from the more typical form of the disease, I have good reason to doubt. On account of the greater reliability and certainty of action and more speedy action of humanized virus somewhat remotely removed from the heifer, I very much prefer it to bovine for vaccination after exposure to the small-pox contagion. Over and over again have I been able to give absolute protection against small-pox by the use of long-humanized virus employed after there was undoubted and continuous exposure. Bovine lymph employed under such circumstances has not given me anything like the same satisfactory results; and for no other reason than its uncertainty and slowness of action.

As already intimated, it is my opinion that the prophylactic power exerted by long-humanized virus is less durable than that exerted by bovine lymph or lymph of recent humanization. This opinion is not based on any direct proof, but rather on a strong inference or logical deduction which cannot be elaborated in the brief time assigned me.

During the last several years there has been a growing belief in the popular mind that humanized virus is liable to convey into the system some constitutional taint. Whether this fear is real or imaginary, I will not stop to consider; but surely animal virus is free from any such imputation, and therefore its introduction into general use is calculated to minimize the opposition to vaccination. Another advantage possessed by animal lymph is that in time of a wide-spread epidemic of small-pox, virus sufficient to vaccinate whole communities can be furnished at short notice.

The question is often asked, are multiple vesicles more protective than single ones? Most writers, I know, answer this question in the affirmative, but my own experience leads me to say that a single, typical vesicle, running regularly through its various stages, gives as great protection as it is possible to obtain from a dozen or more. If, however, the virus to be used is of long-humanization and quite weak in its action, it would be well to make three or four insertions. The practice of making multiple insertions doubtless grew into use in consequence of the deterioration of long-humanized virus.

I will not waste time by proving to you what is so well known, namely, that vaccination exerts a prophylactic power against small-pox. I will briefly dispose of this question by saying that the occurrence of small-pox, in any form, after a recent, typical vaccination, is very rare indeed; and even in the rare instances in which varioloid does occur, the attack is so mild that death never results except, perhaps, in a very feeble person.

While vaccination almost always confers perfect protection against small-pox, that protection, particularly if it be conferred in infancy, cannot be depended upon to continue throughout the life-time of the individual. If, however, the vaccination be done later in life, say at ten, twelve or fifteen years of age, the chances of the protection being permanent are much greater. It seems probable, therefore, that the changes in the system incident to puberty have in some unknown way much to do in reëstablishing the susceptibility. I do not wish to be understood as saying that protection from vaccination in infancy is never permanent, for that cannot be truly said. Perhaps in about 25 per cent. of persons there is not the least deterioration of the protection by time; but in the other 75 per cent. various degrees of susceptibility are reëstablished in the course of a variable length of time—some taking small-pox in a very mild form, and others as severely as if vaccination had never been performed. The character of the vaccine cicatrix even cannot be depended upon as clearly determining anything in regard to susceptibility. It is true that a good cicatrix is stronger evidence of protection than a poor one; but it must be remembered that it is only evidence, not proof. I have seen hundreds of persons who were vaccinated in infancy and presenting typical cicatrices suffer from small-pox in adolescence and adult life; and the death-rate among this class of patients is far from being insignificant. The sooner, therefore, the public, and, I may say, the profession too, come to recognize the fact that vaccination in early life, however typical, cannot be depended upon to confer permanent immunity from small-pox, the sooner will communities be spared from the decimating effect of constantly recurring epidemics of this most horrible disease, because such a knowledge would lead to the more general adoption of re-vaccination.

This brings us to consider, lastly, the value of re-vaccination. Many think that because the vesicle of re-vaccination does not as a rule pursue the regular course of that of true vaccinia, the effect is merely local, exerting no prophylactic power whatever, and therefore that re-vaccination is unnecessary. But surely re-vaccination, to be successful, need not necessarily pursue the typical course of vaccine, for we know that small-pox itself after vaccination frequently differs very markedly from the course of the true disease. If then we have modified small-pox, or varioloid; after vaccination, may we not also have modified vaccinia, or vaccinoid? Believing this, as I do, the conclu-

sion is inevitable that as varioloid gives protection against a recurrence of small-pox; so also does vaccination exhaust whatever susceptibility to the disease may have been acquired since the previous vaccination.

At what age should re-vaccination be performed? The answer to this question depends very much upon the thoroughness of the primary vaccination. A child well vaccinated in infancy only occasionally takes re-vaccination under ten years of age; but under circumstances of great exposure to the contagion of small-pox, it would be well to re-vaccinate children somewhat under that age. During the second decennial period of life the necessity for re-vaccination very greatly increases. A person who has been well vaccinated in infancy, and again at or above the age of fifteen years, will, as a rule, remain protected for the remainder of life. But if one wishes to feel perfectly sure about his protection, it would be well to have re-vaccination done whenever small-pox prevails.

In seeking for evidence to prove the efficacy of re-vaccination, we need only consult the statistics collected during the Franco-Prussian war. It is well known that in no country is vaccination more carefully and systematically performed than in Germany. Every infant there is vaccinated before it has completed its first year, and re-vaccination is done at or about the twelfth year. Every person entering the army is again vaccinated, and, if that fails, the operation is repeated until the surgeon is satisfied that the person is insusceptible to vaccinia. Hence the Germany army may be said to be a well vaccinated army. On the other hand, in the French army vaccination and re-vaccination were in no wise compulsory. During the war small-pox prevailed to an alarming extent, and both armies were freely exposed to the contagion. The loss by death from that disease in the German army was only 263 men, while the deaths in the French army amounted to the enormous proportion of 23,468; and the French army was never very much more than one-half the size of the former.

Physicians connected with hospitals for the treatment of small-pox bear testimony very uniformly to the fact that persons with a history of successful vaccination and re-vaccination are very rarely admitted as patients. Not only is this true in my own experience, but, furthermore, I have never seen a nurse, or any employé in the hospital in this city take small-pox, provided vaccination or re-vaccination was well performed before entering upon duty. While, on the other hand, the disease has attacked a few such attendants, in whom re-vaccination was for some reason omitted or neglected.

Did time permit I might add very largely to the evidence presented in this paper proving the prophylactic power of vaccination; but we have before us, I think, facts sufficient to warrant the conclusion that if vaccination were effectively performed in infancy, and re-vaccination universally employed at the age of puberty, the world would then

begin to realize that Jenner was no mere dreamer when he claimed for vaccination the power to extirpate small-pox from the face of the earth.

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**XXI. The Present and Prospective Sanitary Condition of Pittsburgh, Pa.**

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By CROSBY GRAY, *Health Officer of Pittsburgh.*

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For convenience of description and simplification of details, we deem it advisable to divide the city into *three* divisions. Nature did this for us originally, while the site was still an unbroken wilderness, but instead of *three* divisions she made *four*. On one of these, viz: that portion lying north of the Allegheny river, is located the city of Allegheny, with a population of 95,000. It is connected with Pittsburgh by numerous bridges, and although practically forming a part of it, it has a separate municipal government and does not come within our jurisdiction. There remain then to the city the three natural divisions locally known as the "Old City," the "East End" and the "Southside," containing an area of 29.3 square miles, and a population of 200,000. In general terms the population clustered around the point where the Allegheny and Monongahela rivers unite to form the Ohio may be modestly estimated in round numbers at 300,000.

"OLD CITY."

The portion known as the Old City comprises the original twelve wards, and is located in the angle formed by the union of the Allegheny and Monongahela rivers, extending back to a line of hills, rising at its highest point 530 feet above the level of the rivers, and which formed originally a natural barrier to the extension of the city into what we now term the "East End" division.

The old city contains an area 2.1 square miles and a population of 70,000. Its topography is very irregular, there being little or no level or marshy ground.

It is admirably located for drainage. Perhaps it was on account of these natural advantages that during many years of its history no systematic plan of sewerage was devised and constructed to meet the requirements of its increasing population. A rigid economy seems to have been exercised in this direction for the reason, perhaps, that its topography necessitated the expenditure of large sums for grading its streets, heavy cutting and filling being required to a much greater extent perhaps than in any other city in the country.

The sewers have almost all been constructed within the last 25 years, having been gradually extended as the property became sufficiently valuable to pay the assessments levied for their construction.

It is the old, or "combination system," the separate system devised by Col. Waring not yet having been introduced even as an experiment. The absence of sewers during all these years necessitated, of course, the construction of cesspools, and it is no exaggeration to say that the number is only limited to the number of houses.

It is true that where sewers have been constructed many of them have been abandoned, emptied and filled up; but they still exist in sufficient number to be a constant menace to the public health. The Old City contains 45.04 miles of paved and 4.47 miles of unpaved streets.

The streets are kept as clean, by means of scraping and washing, as is possible in a city where garbage is left to be disposed of by each individual or family, the result of which is, that it is thrown into cellars, cesspools, yards, alleys, and even upon the public thoroughfares. Some of it is hauled about the streets until finally what remains in the open cart or wagon, is deposited upon some vacant lot.

By reason of its excellent natural drainage, the fact that so much of its surface is paved, and that but few if any wells or springs are used or exist within its limits, the Old City, although the most densely populated, exhibits a lower death-rate from preventable diseases than the south side, or even the East End, if we exclude the sparsely populated country districts.

#### "EAST END."

The district known as the East End comprises the 13th to the 23d wards inclusive, and covers an area of 21.96 square miles, much of which is but thinly populated farming country. It contains a population of 77,000. The portion which particularly concerns us from a sanitary standpoint is the plateau on which are located East Liberty, Shadyside, Bloomfield, Bellefield, Oakland and Homewood. This plateau, geologists tell us, was formerly the bed of the Monongahela river, at an epoch when its prism occupied a plane 220 feet above its present elevation. Large portions of it are level and marshy, and it is practically without drainage or sewerage; water stands in many of the cellars, and the cesspools overflow. Even the densely built up portions, are obliged to rely solely for drainage upon open ditches, which usually debouche into swamps in vacant lots.

This district contains 55.45 miles of paved, and 170.89 miles of unpaved streets.

Its sanitary condition is bad, the great need being drainage and sewerage. This would probably be a good locality in which to test the merits of the separate system as devised by Col. Waring.

#### "SOUTHSIDE."

The Southside comprises the 24th to the 36th wards inclusive. It lies along the south banks of the Monongahela and Ohio rivers, contains an area of 5.22 square miles and a population of 56,000. More

than one-half of its total area lies upon the top or slopes of a precipitous range of hills, the base of which approaches, through a portion of its extent, almost to the river edge.

The greater portion of the population is located upon the crescent-shaped bottom known originally before incorporation as the borough of Birmingham, etc. Here fully 30,000 people are crowded upon 700 acres. This locality is but illy provided with drainage and sewerage, although at no point is the Monongahela river more than one-half mile distant from the base of the hills. Of the 700 acres included in this portion, more than 100 acres are built over made ground, formed by the deposit of ashes, chiefly from glass manufactories, largely mixed with street scrapings, and general garbage. The depth of this deposit varies from 3 to 20 feet. In recent years, this district has been visited with epidemics of diphtheria and typhoid fever.

The Southside contains 23.83 miles of paved, and 52.04 miles of unpaved streets.

The sanitary conditions of the populous portions is not good, through lack of proper drainage and sewerage, and also many wells continue to be used.

#### GENERAL CONDITION.

While the city of Pittsburgh as a whole, exhibits a creditably low death-rate from preventable diseases, this is mainly due to the fact that much of it is rural, and that much of the densely populated portion, notably the Old City, is exceptionally favorably located as regards drainage. The percentage of deaths from preventable diseases on the total mortality in each of the *three* divisions of the city for the past ten years, was as follows:

Old City, . . . . .	22.0
East End, . . . . .	23.6
Southside, . . . . .	31.8

The Old City contains 33,000 inhabitants to the square mile, the East End, 3,000 and the Southside, 10,000. Notwithstanding this great difference in density of population the Old City compares almost equally well with the East End, and presents a much more favorable exhibit than the Southside.

#### WATER SUPPLY.

The water supply of the Old City and East End, as shown by chemical analysis, is excellent. It is obtained from a point in the Allegheny river several miles above the populous portions of the city. It is sufficiently clear not to necessitate the use of filters, the reservoir capacity being sufficient to allow settling. For this reason, citizens where city water is furnished, are not prompted (as upon the Southside) to resort to wells and springs in order to obtain clear water. The works are capable of supplying 45,000,000 gallons daily. The daily consumption is 23,000,000 gallons.

The Southside is supplied by a private corporation, with water from the Mononaghela river. This water although possessing a high degree of purity, chemically, is, for lack of sufficient reservoir capacity, furnished the city in a condition so muddy that the citizens often resort to wells and springs in order to obtain the clear but dangerous water furnished by them. This is particularly the case when the river is high and muddy as during the spring floods. Epidemics of typhoid fever have been unerringly traced to this source. Many of these wells and springs have been condemned, and their use abandoned. Efforts are now being made to introduce the city water supply to the Southside, which, if successful, will effectually remedy this sanitary defect.

#### INFECTIOUS DISEASES.

Physicians are required by law to report to the health department all cases of *small-pox, diphtheria, scarlet fever, typhoid fever, typhus fever, yellow fever, cerebro spinal fever* or *asiatic cholera* which may come under their care, giving the residence (street, number etc.) of patients.

Bulletins containing a list of cases of SMALL-POX, SCARLET FEVER, and DIPHTHERIA, with the location of the same, are sent daily to all the schools in the city, both public and private. School authorities are required to prohibit the attendance of pupils from infected families or houses, until thirty days have elapsed after the convalescence or death of the persons so affected, this to be certified to by the attending physician. Pupils are also required to present a certificate of thorough vaccination before being admitted to any of the schools.

#### NEEDED SANITARY REQUIREMENTS.

The most needed sanitary requirement in our city, is the systematic removal of garbage. This subject has already been alluded to in speaking of the Old City.

The health department has labored earnestly for years in this direction, and it was hoped that in view of the impending cholera invasion the city councils could have been induced to furnish the health department with the funds necessary to put it in successful operation. By no other plan can cellars, cesspools, yards, alleys and vacant lots be kept clean. Washing the main thoroughfares will not reach the points where sanitary work is most needed.

During 1885 a thorough and systematic sanitary survey of all the houses in the city was made by the health department. This important work is being continued during the present year, special attention being given to the condition of cellars, yards and privies.

#### INSPECTION OF FOOD.

The health department intrusts the inspection of meat, milk, and other perishable foods to one individual. This work is too extensive for a single official, no matter how competent or energetic he may be.



to successfully carry out. It is simply impossible for him to exercise a constant supervision over the one hundred slaughter-houses scattered throughout the city, and attend to other duties in addition. Vigorous efforts are now being made for the establishment of an "abattoir" at or near the central stock yards, for the slaughter of crippled, and disabled animals. This if successfully accomplished will greatly facilitate the proper inspection of meats, but should be supplemented by the establishment of additional general slaughtering houses, and the abolition of the smaller ones, many of which are, on account of location, and manner of construction, nuisances of the worst character.

#### HOSPITAL ACCOMMODATIONS.

It may be a matter of surprise to the world outside to know that the large and wealthy city of Pittsburgh contains no hospital accommodations (other than private) excepting the building under control of the health department, devoted to the use of small-pox patients. During the last epidemic of small-pox, a new addition was built to the old structure, which was not completed until near the subsidence of the disease, and consequently has never been used for the care of small-pox patients. This building, capable of accommodating thirty, is all the city will possess for the care of patients in case of emergency, arising from the advent of cholera.

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#### XXII. The Water Supply of Philadelphia.

By J. CHESTON MORRIS, M. D., of *Philadelphia*.

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Some statistical people, in estimating the civilization of any nation measure it by the number of yards of muslin required by the average individual. Much more rational it would seem to me to measure it by the daily average supply of water required. To enumerate the various needs which this gift of nature meets, would tax both time and patience. Suffice it to classify them under the three heads of nutrition, cleanliness, and manufacturing purposes. With the two former classes we as sanitarians are more especially concerned, and to these I would invite your attention. As an aliment, it is necessary that the water we drink should be free from noxious qualities, and yet that it should hold in solution such saline and earthy constituents as shall tend to the building up of the tissues of the body, and promote the healthy exchange of elements of which the tissues are composed, replacing worn-out, effete matter by fresh. Were it essential only to provide a pure water, we could obtain a sufficient supply for our needs by the construction of rain-water cisterns, to be filled by the bounte-

ous showers which vivify and fructify all habitable lands. The water thus obtained is not indeed absolutely pure water ; it has been shown to be charged with gases, and even some ammoniacal salts, as well as dust particles, etc. The latter may to some extent be filtered out ; but the resulting liquid is not refreshing to the taste, and is wanting in those ingredients which promote tissue metamorphosis and development. Hence this method is only to be resorted to "*faute de mieux*."

When rain falls on the surface of the earth, a large part of it is absorbed and percolates through the soil and rocks, becoming charged with the various elements it meets with according to their amount of solubility. The chemistry of nature is beyond our power to follow or to imitate, except in some instances "*longo intervallo*." We know mainly its results in the bubbling springs and fountains that run from the hills. How refreshing and vivifying is such "*living water!*" To it we are apt to turn as the best type of what we want for our daily supply.

#### SPRING WATER'S IMPERFECTIONS.

But let us look a little closer. Not only has the rain water acquired the saline materials and earthy salts which we need ; there is also generally in spring water an amount of animal life which shows that the beings of humbler organization than ours have been disporting in it by the thousands. Think of the brownish sediment in the spring, and of the abundance of decaying vegetable matter to be found constantly accumulating there, and you will soon be convinced that spring water is not and cannot be the best type of potable water. Think again of the crayfish, the dead larvæ, the caddis worms and other forms of life, whose excretions and decomposing bodies are to be found there, and you will need no further proof that we must seek elsewhere.

If still skeptical, let me remind you that navigators when seeking supplies of water for crews on long voyages find that such water, when allowed to stand, undergoes a species of fermentation ; it becomes "*sick*," emits a nauseous odor, is more or less ropy, and finally deposits a sediment. After this has occurred, the supernatant fluid once more becomes wholesome and sweet. A number of years ago, I had sent me for analysis some water obtained from wells in a district where typhoid dysentery was raging. The region was a limestone one, with fissures through the rocks, draining all the country into the Susquehanna river. This was evident from the fact that the amount of water in the wells depended on the height of the water in the river. When certain rocks in the latter became bare, typhoid dysentery became epidemic, so that the rocks came to be known as the "*Doctors' Marks* ;" nor was the reason far to seek. A glimpse through the microscope showed a world that would delight a Leidy or a Koch. Through the

summer the minute organisms reveled and multiplied, and their dead remains settled and accumulated at the bottom of the pools. When the drought of July and August brought the well-bucket into the sediment, a disease-producing element became the beverage of every household. If any one wishes to see this for himself, it can easily be done by allowing a pitcher of spring water to stand for a few days and then carefully examining the slimy sediment which will form.

#### STREAMS AND LARGER RIVERS.

Let us follow the water in its course to the streams and larger rivers and note the changes which occur. Nature establishes vast aquaria, in which plants and animals of larger growth abound and balance each other. Our experiments on a smaller scale show us how the animal and vegetable life may be made to balance each other, each supplying what the other needs, and removing the material resulting from the life of the other which would otherwise be noxious to it. Not only is this process going on upon a scale too vast for us to imagine, but in our streams and rivers another agency, or rather two agencies, are at work whose results would pass our belief, had we not the most convincing proofs of their potency. I refer to *aëration* and *subsidence*. In the brooks and streams the water, as it ripples over the stones, becomes charged with oxygen—the organic matters it contains are changed—it parts with some of its carbonic acid, and as it is filtered among the coarse gravel and stones, and meets with waters containing other earthy salts, deposits are formed which, when the water moves again more slowly, subside to the bottom; and, freed from its burden, the water in the river becomes again life-giving—life-sustaining. Hence, when we would seek for the best supply for a large city we should seek for it in a large stream or river, where these processes of duration and subsidence have had full opportunity to do their beneficent work. But it is not to be forgotten that man may mar this work of beneficent nature. When the river or stream becomes the receptacle of filth and excrement, of decaying matters, or of the poisoned refuse of factories, it is no longer health-giving, but may even become pestilential. Not only drinking from it, but breathing the tainted air above it, is the cause of disease and death. It is not my purpose at present to more than allude thus generally to these sources of danger to a community. The allusion is sufficient to enforce the necessity of avoiding the danger. Miasmatic, typhoid, and choleraic diseases afflict communities which disregard the purity of their water supply and surroundings. These sources of contamination are susceptible of being guarded against. Sewage even from the largest towns can and should be prevented from entering the rivers on which they are placed. It is no longer an experiment, but an experience, that it can be profitably handled, and thus become a source of revenue

instead of a cause of disease. It would be beyond the scope of this paper to adduce the proof of this from the experience of Manchester in England, Paris in France, and several of our New England towns.

### SALTS IN RIVER WATERS.

Another point to which attention should be paid is the character and amount of earthy salts, etc., which are present in the water of rivers, and largely influence their character for usefulness or the reverse for drinking purposes. As already alluded to, these salts possess great advantages when present in due proportion in regulating and controlling the metamorphosis and growth of issues. Potash, soda, lime, magnesia, iron, sulphates, and chlorides are essential constituents of our bodies. If not present in sufficient quantity in our food and drink, they must be supplied as medicines. If, on the other hand, they are present in excess, or in undue proportion, irritation of the system results. Various mineral springs have often their use in removing from the systems of those whose sedentary lives, or excessive indulgence in food, have rendered their blood overloaded, with effete matter. Others again supply material which has been wanting in an assimilable form. Thus it is seen that a water may be too free from inorganic salts—as some have supposed that to be which supplies the city of Glasgow. It is drawn from Loch Katrine, and contains only a small proportion of earthy matter. Or, again, magnesian salts may be over-abundant, as in the water supply of Paris. Those who have tasted it will recall how inefficient it is to quench thirst. Or, like the waters of the Croton or Cochituate, such a proportion of chlorides may be present as to irritate the kidneys and bowels. The effect of a carbonate of lime water in producing diarrhœa with those unaccustomed to its use, is also known to all. The presence of chlorides is also dangerous if the water be conveyed in leaden pipes, as minute quantities of lead are dissolved in it, through their action, while the insoluble sulphate of lead, which soon forms from our Schuylkill water, for instance, constitutes an impermeable safeguard against this danger.

Our best guide as to what is the best proportion of these mineral ingredients is an enlightened experience.

### APPLICATION TO THE CITY'S SUPPLY.

We come now to the application of the above facts to the consideration of the water supply of Philadelphia. With a population of nearly one million of souls, eighty million gallons daily is our present need. But estimating the probable increase of the city in the near future we shall soon need one hundred and twenty millions daily. Nor is the present condition of our supply reasonably satisfactory. We have been threatened in summer with water famine. The present works are taxed to their full capacity, and the water flowing through our mains

is frequently muddy. This condition of affairs is largely due to the delay in erecting the large subsiding reservoirs which have been time and again recommended by the various engineers and others who have had charge of our water supply. To give the reasons for this delay hardly comes within my province; but I think it a worthy subject of earnest congratulation that at length there is a prospect of the East Park and Cambria reservoirs being pushed forward to speedy completion. More are needed, as when these are added to those already existing we would only have storage capacity for ten or twelve days supply. When an opportunity has thus been offered for subsidence of the earthy impurities, much, if not all, reasonable complaint of its occasional muddy character will have disappeared.

If, as I have endeavored to show, large cities should depend mainly on large streams or rivers for their supply, we should then have to choose between that furnished by the Delaware and Schuylkill, or upon supplies furnished through long aqueducts. The latter are not to be regarded as favorably as the former, other things being equal, from a sanitary point of view. In this matter we may learn a lesson from the experience of New York and Boston. The influence of sunlight and air upon the water are wanting in this mode of transmission, and the result is sometimes a deterioration in quality. Long aqueducts also entail heavy expense, both for construction and repair. They are necessary when no better means can be devised. But how much better it would be should the city of Philadelphia control the whole watershed of the Schuylkill—accumulate in suitable storage reservoirs upon its larger tributaries a sufficient supply to meet any emergency and utilize nature's purifying processes of aëration and subsidence in its whole length. Dams could be constructed, and streams such as the Upper Perkiomen impounded and their contents released into the river as occasion demands, or the water could be brought directly by gravitation into the Cambria reservoir through an aqueduct, if this should be deemed advisable. Ultimately this aqueduct could be extended to the Upper Lehigh region, or a short tunnel could bring water into it from the Tohickon, and an increased supply obtained thence.

Such would be the possibility of a good and sufficient supply for our city in the distant future. But in the present and immediate future the supply which could be drawn from reservoirs and storage dams thus constructed on or near the Schuylkill would be ample and of excellent quality. On this latter point we have the testimony of chemists who have examined the waters both of the Schuylkill and Delaware. While the former is, indeed, rich in mineral matters, the latter has a larger amount of organic matter. The abundance of lime sulphate in the Schuylkill has been alleged as a disadvantage. This I have tried to show is a mistake. Owing to the source of this lime salt, *i. e.*, the water of the upper Schuylkill being charged with acid water from the

coal mines, coming in contact with the limestone water above Reading, a precipitation of sulphate of lime occurs which carries with it much of the impurities contracted above. Thus, an explanation is afforded of the statements of Colonel Ludlow and Professor Leeds, that the river is found in its best condition near Phoenixville.

Objection has also been made to the Schuylkill water on account of the increase in the amount of these earthy salts, which has corresponded with the development of coal-mining in the Schuylkill region. But already a change has begun in this respect, and the water seems to have attained the maximum amount of such change, owing to the active mining operations having been transferred from the Pottsville coal field to those lying to the west and north. The same causes may hereafter affect the Lehigh and Susquehanna. Another, and at first appearance a more serious objection, has been made to the Schuylkill as the source of our supply, the much denser population now inhabiting the basin of the Schuylkill than that of the Upper Delaware. This, however, seems to me to be more specious than real. The population of the Schuylkill has, owing to the stimulus of the coal and iron industries, reached a point approaching its maximum, and, as these are developed elsewhere, the future increase will be relatively small. Such as it now is, mainly congregated in the cities of Norristown, Phoenixville, Reading, Pottstown and Pottsville, sewage works can readily be established, which will effectually free the river from contamination from this source. When we think, on the other hand, of the factories and furnaces scattered along the Lehigh, of Easton, Bethlehem, Mauch Chunk and the rapidly developing industries of that region, to say nothing of the other towns and cities on the Delaware, I think it must be evident that nothing less than an aqueduct to bring water from the Delaware above the Water Gap can meet our wants, even were the water there proved to be as good and potable as that which now flows by us at Fairmount. As a matter of fact and experience it should be remembered that the much abused Schuylkill water has been found adapted to their varied uses by the large manufacturing establishments which have made this city the great manufacturing city of the world. So much for its adaptedness to manufacturing purposes.

#### THE SCHUYLKILL'S ADVANTAGES.

My proposition then would be, that the city should acquire and retain control of the whole Schuylkill watershed for the purpose of securing in perpetuity a good and sufficient water supply, and erect such storage dams and reservoirs as would allow of proper aëration and subsidence and the maintenance of a good quality and quantity at all times. And that there should be a warden or wardens of the river appointed, whose duty it should be to secure the stream from pollution in its whole length from Fairmount pool up.

This plan of utilizing the Schuylkill basin would therefore have the following merits :

1. It would not cost any great immediate outlay.
2. It would be immediately available.
3. It would yield an abundant supply.
4. It would be a financial advantage to the city.
5. A warden of the Schuylkill could be appointed to insure the freedom of the stream from pollution. Such an officer could be created by the Legislature, or under existing laws the city could appoint commissioners whose duty it should be to secure this object. But in order to do so all sources of pollution coming from within its own domain must be removed. The intercepting sewer must be completed and used, and other like means adopted.

In the future the main pumping should be at Flat Rock, saving twenty-two feet elevation. This alone would soon save cost of transference of the works from Fairmount Park, or the erection of new pumping machinery, the present plant being allowed to remain to fill the Fairmount reservoirs and for subsidiary uses, such as for flushing streets and sewers and in case of fires. The early completion of sufficient storage and subsiding reservoirs is to be looked upon as demanded alike by all the plans hitherto proposed ; and we cannot be too earnest or active in hastening their construction. There would then be no difficulty should the city possess control of the water power of the Schuylkill in filling these by pumping by water—while the river is high—which would prove a good source of economy.

In support of the views above stated as to the effect of æration and subsidence, I would refer to the report of Colonel Ludlow on the future water supply of the city, and the results obtained by him from the analyses made by Professor Leeds. While he does not recommend the Schuylkill, but on the contrary maintains that the water from the Wentz farm, or the South Mountain plan, or the upper Delaware is better, yet he acknowledges that the water taken near Phoenixville "represents the Schuylkill at its best," *i. e.*, after the natural processes of æration and subsidence to which I have called your attention ; and that it is a good water. One of the samples of Schuylkill water analyzed for Colonel Ludlow, in which the ammonia was so remarkably high, was obtained, I am told, in the afternoon from a pool in which a herd of cattle had been standing all day ! One such fact is ample to point to the necessity of such an officer as I have proposed, whose duty it should be to see that no fouling of the stream, whether by human or other animal excretion, or by factory refuse, should be allowed. When this is done and subsidence reservoirs provided, there will remain no reasonable cause of complaint of the supply from our noble and beautiful river.

What more or better can be said of it than that the city of Philadelphia has thriven upon the water supplied from it for one hundred

years—steadily increasing in health and prosperity? Our annual death-rate is lower than that of any larger city except London; and, so far as I am informed, our manufacturers, even in spite of its alleged hardness, desire no better quality than it now affords. Except for the *preventible* sewage contamination, such as I have alluded to, there is, in my belief, as based upon our long experience and the results of chemical analyses of Professors Boyé, Booth and Garrett, and even those of Professor Leeds, no better supply to be had, or that need be desired.

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### XXIII. On Wholesome Water for Cities and Towns.

By CHARLES SMART, M. D., *Major and Surgeon U. S. Army.*

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The purest and most wholesome natural water is derived from springs that are distant from human settlement. The rain-water, falling from the clouds and precipitating with it the impurities that have accumulated in the atmosphere, is absorbed by a porous stratum of the earth's crust through which it filters until it again reaches the surface as a clear and sparkling spring-water. During this process of percolation through a virgin soil all causes of turbidity are removed, and the nitrogenous organic matters existing in solution are converted into harmless inorganic compounds. In its progress the water becomes more or less charged with inorganic gases and mineral salts, but these, so long as they do not interfere with potability and economic uses, are not only harmless, but endue the water with a wholesome sapidity.

The early settler went to the spring for his water or tapped the water bearing stratum at his own threshold; but this latter mode of obtaining a supply came in time to be attended with the danger of a contaminated inflow. The foully saturated soil of our growing settlements at the present time renders it imperative that we either go to the springs, like the early settler, or have the spring water brought to us. In choosing the latter method, a certain deterioration in the quality of the supply is accepted in part payment for the convenience of tapping the springs on every floor of our houses. The waters of many springs have to be impounded, or those of innumerable springs have to be pumped up from the flowing river. In either case the percolated waters are mixed with a surface inflow, the purity of which depends on the character of the surface which conveys the rainfall. A strict surveillance over the limited water-shed of impounded springs may protect the supply from all impurities, save those precipitated from the atmosphere and the vegetable and mineral matters washed from the surface of the soil. When the water is taken lower down



from the river current, the impurity is increased, because the larger area of the water-shed cannot be so well protected from the harmful effects of its settlement. Besides vegetable decay and fine mineral particles, a certain quantity of the waste of human life and human industries will contaminate the supply. Vegetable matter washed down from the uplands or draining into the current from stagnant ponds, swamps and marshy bottoms, and animal matters contributed by the sewage of the upper settlements are the dangerous substances that enter the water supply derived from the river current.

The chemist can determine with accuracy the elements of the organic matters in a water. He can in many cases state whether they existed mainly in the form of vegetable or of animal matters, and in certain cases he can point out the existence of recent sewage; but he cannot state whether the organic matter discovered is of a harmless or a deleterious character. Ordinary or non-specific vegetable matters are apparently harmless in water, unless present in such quantity or in such a state of fermentative change as will give an observable taint to the supply. So with ordinary or non-specific animal matters, among which are included those known to exist in what has been called *healthy* sewage. But certain specific organic matters, sometimes present, are known to be exceeding unwholesome. These are well recognized facts. Unfortunately the chemical processes fail to differentiate between the ordinary and the specific organic matters. The dictum of the analyst is based upon the assumption that where there is a large impurity the likelihood of a specific accompaniment is greater than where there is a small impurity. His results may authorize a verdict of probable unwholesomeness; but in no instance in which the sense of smell or taste is unaffected, can he be more explicit on this side of the question, and in no instance whatever can he give an assurance of wholesomeness.

On the other hand, when the laboratory results are compared with the data furnished by a thorough investigation into the sanitary aspects of the case, a new light is thrown upon them by which much of their ambiguity is removed. But by sanitary investigation is not meant a mere survey and enumeration of the sources of polluted inflow, but an inquiry into all the points which bear upon the propagation of disease by the water supply, and especially for those diseases which the collected experience of the medical profession has indicated as connected with a polluted water. The indigenous diseases thus associated are not numerous. They consist of fevers that are more or less continued and of fevers that are essentially paroxysmal in type—of typhoid fever and of malaria fevers—the one intimately connected with an *animal* impurity in the water, and the other as intimately connected with a *vegetable* impurity.

The incompetency of the chemical processes to pronounce on the unwholesomeness of a water is more frequently illustrated when ani-

mal matter is in question. Waters comparatively free from vegetable impurities have never been accused of malarial possibilities—while waters largely thus contaminated have often been so charged and adjudged guilty. But a water which has been the apparent propagator of typhoid fever may or may not be found foul on analysis; and waters manifestly foul from sewage inflow have been used for long periods without producing an injurious effect. The recent records of medicine are full of instances in which a well with sewer or cesspool connections has been used for years with no harmful results so long as the sewage inflow was small and of an ordinary or non-specific character; but as soon as a specific infection was added, the well has become a center of typhoid propagation. Whether the specific infection is always derived from the intestines of an antecedent case of the disease or is generated in an impure soil under certain conditions is immaterial to the present argument. It is sufficient to know that the infection is present in the typhoid excreta, and that, when any of this infected matter percolates into the well, fresh cases of typhoid fever are developed in susceptible persons, who make use of its waters for drinking purposes. Usually in such wells the sewage inflow is so great that the chemical results show an undesirable contamination; but in many instances the inflow is so small, or the purifying influence of the percolation through the soil is so great, that the infected water may give a fairly good showing on its analytical record. In other words, the quantity of infected sewage necessary to the spread of typhoid by a well-water is so small as to evade detection by chemical methods, or the influence of a filtration, which effects the destruction of ordinary organic matter, leaves the specific poison unaffected and in full potency. So well are these facts recognized and acknowledged, that the health officers of many cities having a trustworthy general supply, have not hesitated to close up the wells within their jurisdiction.

It has been said at the beginning of this paper that the purest natural water is that which has been filtered through a clean soil. The organic matter is reduced to an inorganic condition. It becomes split up into transitional and unstable forms, the changes terminating in the rapid nitrification of a produced ammonia. A water thus purified may yield but little free or albuminoid ammonia on analysis, and even the nitrates that remain to indicate the former sewage pollution may constitute an apparently trifling quantity; but this water, pure according to the analytical record, may be a dangerous propagator of enteric fever if the sewage that has been destroyed was an infected sewage. The purifying influence does not affect the fever-poison, nor does the filtration remove it.

Now, if the infection of an infected sewage be not separable by filtration, and can withstand the powerful agencies that in the process

of filtration destroy the accompanying sewage, will the infection of an infected sewage poured into the current of a river be destroyed by a flow of so many hours in that current? Will that which cannot be separated by filtration be removed by subsidence in a flowing stream which is often manifestly turbid? Will that which is not destroyed by the most powerful of natural purifying influences be rendered inert by the weaker influences operating on the flowing water? If not, river waters that have been polluted with an infected sewage will communicate typhoid fever as surely as well waters that have been similarly contaminated,—and wholly irrespective of the results of chemical analysis.

Chemists, looking only at the laboratory results, have announced that the running water becomes purified as it flows, and that at a certain distance below the point of sewage inflow it becomes again as free from organic matter as it was before the introduction of the contamination. A distinguished authority in this country has spoken with emphasis on this point: "It should be distinctly stated," he has said, "that there is no foundation in fact for the oft-repeated statement that water once polluted by sewage can never again become safe for drinking purposes. Wherever the pollution and subsequent self-purification of a flowing stream has been patiently investigated the chemical testimony as to the reality of this self-purification has been convincingly demonstrated." But the conclusions of the English Rivers-Pollution Commission are opposed to this claim. "It will be safe to infer," it is stated, "that there is no river in the United Kingdom long enough to affect the destruction of sewage by oxidation." Nevertheless, self-purification, to a certain extent, may be accepted as a fact. Dilution, sedimentation, aëration and nitrification go on in the current, and all that tend to improve the analytical record of the water; but the chemical testimony which convincingly demonstrates the reality of this self-purification does not demonstrate the safety of the water for drinking purposes. Dr. Buchanan, of England, summing up the results of a recent investigation, stated that we have no evidence in the case of an unknown water that it is safe organically, although the chemical testimony may place it in the list of waters of extraordinary organic purity; and, practically, the same conclusion was reached by the investigation conducted in this country by Professor Mallet, of the University of Virginia.

To demonstrate that a water which has been polluted by an infected sewage may again become safe for drinking purposes, it is needful to show that typhoid fever is not a prevailing disease among the people who use it. There are many difficulties in the way of effecting this demonstration, and chief among these appears to be the well attested fact that typhoid fever does prevail among them, and in many recorded instances has been traced to the water as its source. Witness the epidemic of last year at Plymouth, or the Lausen epidemic, in

which the water underwent a thorough natural filtration before propagating the disease. There is no difficulty in showing that typhoid fever prevails among people who use an infected water; but it is often extremely difficult to prove the charge against the water. We may appeal to statistics, but our statistical records are not always trustworthy. The typhoid influence of a general water supply may be modified by that of a supplemental supply from vitiated wells. Water carriage is not the only method by which typhoid is propagated. Not long ago sewer air was regarded as an ever present cause in our cities, and there seems no doubt that infected exhalations contribute to the prevalence of the disease. Secondary foci from primary cases may give rise by mediate contagion to local epidemics which obscure the influence of a weakly infected water supply. Nevertheless, there are some points, other than those already mentioned, in the natural history of the typhoid poison that countenance the belief in its propagation by contaminated river water. Typhoid fever differs from small-pox, measles and scarlet fever in having no cyclical prevalence. It is not a rare clinical study and sanitary anxiety at one time and a prevailing epidemic at another. Where many people are aggregated, its causes are always present and always in operation. But it has a well developed seasonal tide in its prevalence, which spreads its maximum in this country over the latter half of the third and the first part of the last quarter of the year. Dr. Baker, of Michigan, has shown that in his State this increased prevalence follows a low stage of water in the wells, when sewage inflow is less diluted than at other seasons. But the same period of prevalence holds good in the cities which have a general water supply, corresponding with the time when the sewage inflow into the streams is in like manner undiluted.

Again, in looking at the typhoid statistics of certain cities, in which the complicating elements appear to be at a minimum, we cannot fail to be struck by the fact that the prevalence of typhoid fever is in a measure proportioned to the sewage pollution of the water supply. It is to be noted in this connection that although a given sewage may not be an infected sewage, it must be regarded as possessing the elements of danger in view of the general distribution of the fever in rural as well as in urban districts.

Brooklyn, Long Island, has a water supply perhaps less contaminated with sewage than that of any large city in this country. It has also a smaller rate of mortality from typhoid. Last year 23 persons died of this fever in every 100,000 of the population. This is not an accidentally small rate due to the absence of an epidemic during that particular year, for the average annual rate of the last ten years was only a little over 15 per 100,000. The city of New York has a water supply that is guarded with much care from sewage inflow, but it is derived from a much more extensive area than the Brooklyn water. The typhoid death rate last year was 21, and the average annual rate

for the past ten years 26. A constant supervision is exercised over the water supply of the four millions of people aggregated in the city of London, England; and the mortality rate of the continued fevers, including typhus, amounted only to 17 during the past year, while the average annual rate of the past ten years was but little over 28 in the 100,000. These figures may be regarded as a standard of comparison for the rates of other cities.

The water supply of Boston has a careful superintendence, but it is known to have a certain amount of sewage inflow. Correspondingly we find that the typhoid mortality rates are higher than those already instanced. The rate for 1885 was 38, and the average of the past ten years 43. Cincinnati, supplied by the Ohio river, gives higher typhoid rates: 44 for the past year, and 63 as the average of the past ten years. Philadelphia, supplied chiefly by the Schuylkill, had a typhoid rate of 64 in 1885, and an average rate of 66 for the past ten years. These rates for Philadelphia mean that during the past ten years there died of typhoid fever 4,400 persons who would not have died of that disease had the Brooklyn rates prevailed; and that over 50,000 people suffered from a dangerous and debilitating illness who would have escaped attack had Brooklyn causes operated on them instead of those of Philadelphia.

If the views that have been submitted are correct, we would infer the presence of an infected sewage in the Schuylkill water, or the presence in Philadelphia of typhoid causes that do not exist in Brooklyn, New York or London. According to the records of the water department of the city a notable sewage inflow has existed since 1860, when complaints were made of the foul taste and color of the water, and when certain sewers were specially mentioned as occasioning the impurity. A recent report says:

"The Schuylkill above Fairmount dam is the natural sewer, first and last for a population of 350,000, largely engaged in manufacturing; and whatever may be the varying judgments of physicists as to the power of a running stream to purge itself of foreign contamination, it is very certain that the river itself has, from time to time, furnished the most convincing evidence of its inability to digest or dispose of the extraneous and injurious matters discharged into it."

With regard to other assumed causes of typhoid, it does not appear that Philadelphia is specially their habitat. The aggregation of susceptible individuals on a given area undoubtedly facilitates the spread of this disease; but the area of Philadelphia is less crowded than that of most cities of its size,—certainly less so than that of New York or London. The progress of sewer construction has kept pace with the growth of the city. It has been demonstrated by many statistical comparisons that the introduction of a system of sewerage has invariably lessened the death rate of a city, and particularly the rate occasioned by the zymotic diseases; yet Philadelphia, so far as regards

typhoid fever, retains or even exceeds the rates that prevail in certain unsewered cities.

The following table shows in parallel columns the annual death rate from typhoid fever per 100,000 of the population in the sewered city of Philadelphia and in the unsewered cities of Baltimore and New Orleans. The rates for each of the past twenty years are given, yielding an average for Philadelphia 61, slightly lower than that for Baltimore, 65.4, and considerably larger than that for New Orleans, 33. When we restrict our inquiry to the rates of the past ten years it is found that Philadelphia has a higher mortality than either of the two other cities, 66.1, as compared with 52.5 and 24.6. The soil of Baltimore is honey-combed with pits and vaults of deposit; and although the city has had a general water supply for many years, the well-water supply has been used to a considerable extent. I have but little personal knowledge of the character of these well-waters. In 1879, I examined one of them, situated in the enclosure of the Johns Hopkins University. It was rather a rank ammoniacal solution than a potable water. The use of such waters may be held in view in regarding the rate of the first of these periods of ten years. In 1880, an additional supply was brought into the city from the Gunpowder river, and perhaps the consequent disuse of contaminated wells may account for the lessened frequency of typhoid of late years. At the present time there are 62 public wells in use, 13 of which are artesian; all the others have been condemned and closed. There are, however, many private pumps which are not under the control of the health commissioner. These, with a trifling amount of sewage inflow into the waters of Jones' Falls and the Gunpowder river before they reach the storage lakes, may be held responsible for the typhoid prevalence at the present time. The sanitary condition of New Orleans will be referred to hereafter.

ANNUAL DEATH RATES FROM TYPHOID FEVER PER 100,000 OF THE POPULATION IN PHILADELPHIA, BALTIMORE AND NEW ORLEANS.

	Philadelphia	Baltimore.	New Orleans.
1866. . . . .	60	80	65
1867. . . . .	57	94	66
1868. . . . .	60	65	31
1869. . . . .	56	80	34
1870. . . . .	61	99	42
1871. . . . .	45	73	37
1872. . . . .	52	66	34
1873. . . . .	50	82	29
1874. . . . .	62	83	47
1875. . . . .	55	62	28
Annual rate for the decade—	55.8	78.3	41.3

**ANNUAL DEATH RATES FROM TYPHOID FEVER PER 100,000 OF THE POPULATION IN PHILADELPHIA, BALTIMORE AND NEW ORLEANS.**

	Philadelphia.	Baltimore.	New Orleans.
1876, . . . . .	98	60	26
1877, . . . . .	68	75	33
1878, . . . . .	50	55	21
1879, . . . . .	41	51	15
1880, . . . . .	59	59	24
1881, . . . . .	74	58	30
1882, . . . . .	73	47	33
1883, . . . . .	63	36	23
1884, . . . . .	71	42	25
1885, . . . . .	64	42	16
Annual rate for the decade—, . . . . .	66.1	52.5	24.6
Annual rate for past 20 years—, . . . . .	61.0	65.4	33.0

In a valuable article, read last year at the Ypsilanti Sanitary Convention, Dr. Erwin F. Smith has tabulated many of the statistics bearing on the lessened mortality from typhoid, coincident with the introduction of a general water-supply and a system of sewerage. These are usually contemporaneous improvements, but the removal of the filth by water carriage constitutes so notable a change in the sanitation of the municipality that the influence of the water-supply is generally regarded only in so far as it has contributed to that end. Nevertheless, it is a question if the water-supply *per se* be not a more important factor in the subsequent decrease of sickness than the system of sewerage. On its introduction the water is usually of excellent quality. It takes the place of dangerous waters from the sub-soil of the city, and contributes proportionately to the typhoid diminution. But, later, as the water-supply becomes defiled by the growth of settlements on the area of its derivation and along its course, it may become as much charged with dangerous matters as the well-waters which it supplanted.

To what extent the Schuylkill water-supply is responsible for the typhoid rates of Philadelphia is not for me to indicate. Due consideration must be given to all the other influences that are known to favor the propagation of the disease. One of these, the sub-soil water, still operates to a considerable extent, although the board of health has taken action against it and directed the closure of the wells. Dr. Leffmann in a recent paper suggested that the irregularity of the distribution of the deaths from typhoid throughout the city is opposed to the idea of typhoid propagation by the Schuylkill supply; but local epidemics, originating in infected wells, may account for this irregularity without excluding the possibility of a generally diffused

but less marked prevalence. It does not appear that in New York City the disease is confined to any particular locality; its distribution is general:—and the maps of the health officer of Washington city show an indiscriminate scattering of the deaths over the populated areas.

One other argument in favor of the connection between a sewage-polluted water and the prevalence of typhoid may be derived from the recorded statistics of mortality. If it were possible to build a city with all the sanitary conditions, whatever they may be, that underlie the surface of Philadelphia, and to supply that city with water certainly free from sewage, a death-rate from typhoid in this supposed city equalling that of Philadelphia, would throw the causation of the disease upon other agencies than the water supply; and correspondingly a comparative freedom from typhoid in the supposed city would strengthen the argument in favor of a water propagation for the diseases in Philadelphia. Such a city cannot be built to order; but fortunately New Orleans presents us with many of the essentials of an experiment of this kind. New Orleans has no sewers; all its liquid filth flows sluggishly in open channels by the sidewalks; its more solid refuse is collected in boxes, in closets and outhouses, whence it is carried to the current of the Mississippi; the subsoil water is so impregnated with drainage from the surface as to be unfit for portable use; and the exhalations from the sluggish drains, the closets and outhouses, not unfrequently taint the air in many parts of the city. Here are conditions as to subsoil and surface which would be regarded as accounting sufficiently for an extensive prevalence of typhoid were it found to be present. Certainly they must be considered as more conducive to the spread of zymotic disease than the corresponding conditions of subsoil and surface in Philadelphia, for the general results of modern sanitation show a sewered city to be a healthier abode than one that is not sewered. But this city of New Orleans has a water-supply that is free from sewage inflow. The Mississippi water is pumped up mainly for use in flushing the streets and drains, while the domestic supply consists of rain water collected and stored in cypress wood cisterns which are raised above the suspicion of a contamination by sewage. And the typhoid mortality, 16 during the past year and 25.6 as the average of the past ten years, is as low as the standard rates furnished by the cities of New York and London.

May we conclude from these arguments, that the inflow of sewage into a stream is fraught with too many dangerous associations in connection with typhoid fever to warrant the use of its water as a general supply, no matter how convincing may be the chemical testimony as to its organic purity? Whatever other modes of typhoid propagation may be allowed, that from the sewers and vaults, which are the "continuation of the diseased intestines," is incontestable. The influences operating on the flowing water do not destroy the essence of the disease, nor, as shown by the history of every infected well, does the



process of filtration effect the separation of the poison. The advocates of sewage irrigation become enthusiastic over the clearness and purity of the water that flows from their under-drains, and suggest that the general use of this system for the disposal of sewage would reclaim our polluted streams and permit them to be again used with safety for household purposes. But the essence of sewage irrigation is filtration, and filtration through a notoriously polluted soil. The unwholesomeness of well water in a soil saturated with sewage has been so often illustrated, that we may well be excused for showing some hesitancy in accepting the effluent water of sewage irrigation as a general household supply. The adoption of this system of irrigation would undoubtedly prevent our streams from becoming open sewers; but here the advantage ceases. So long as we know that, not sewage, but a sewage polluted mountain stream used for irrigating purposes in one valley occasioned a general outbreak of virulent typhoid among the inhabitants of another valley, who used the clear water of the effluent, we must acknowledge that filtration cannot be trusted to render an infected water safe. Hence, if the conclusion above suggested be admitted, the only method by which typhoid, communicated by a general water supply, may be avoided is to procure a supply of water that is free from sewage and preserve it in its condition of natural purity.

The vegetable matters in a water appear to be dangerous in proportion as the water exhibits the usual characteristics of marsh or swamp waters. The organic matter in these is comparatively large in quantity, and contains a larger proportion of carbon combined with its nitrogen than is found in animal matter. This is shown in the laboratory by direct analysis, or indirectly by the large quantity of oxygen that is required to oxidize a matter yielding a relatively small quantity of albuminoid ammonia. The microscopic life in these waters is of an elementary form, consisting largely of sluggish protoplasmic masses. Remittent fevers have been frequently associated with the use of such waters. But it does not follow that these vegetable matters in themselves constitute the essence of malarial disease. The accepted theory is that organic matter during its decomposition, under certain conditions in the soil, evolves a noxious miasm. This miasm escapes into the atmosphere and its subtile influence is felt at considerable distances from the place of exhalation. It is known to be condensed and concentrated by fogs and falling moisture, and it seems probable that even the rainfall is not free from a taint of this impurity among the other impurities which it washes from the atmosphere. But, the chief source of a malarial contamination in our surface waters is their contact with an exhaling soil. Hence, although a malarious water may exist without an associated charge of vegetable organic matter, it usually contains a very notable quantity; and this quantity may be regarded as an index of the malarial possibilities of the water.

The propagation of malarial diseases by means of the drinking water has of late years been generally accepted by the profession. Proof was difficult to obtain because of the long continued and unquestioned acceptance of the doctrine of an aërial miasm. When the requisite spot of malarious soil was not present to account by its exhalations for some obscure or anomalous case the existence of such a spot was assumed, for it seemed more plausible to suppose that the malarious locality had escaped recognition than that the time honored doctrine was inadequate to explain all the cases. But when attention was directed to these obscure cases they were found to be very numerous. They were common in all our western territories on elevated grounds where there was apparently no source of malarial exhalations; and these cases were always of a serious character,—remittent fevers rather than simple agues. They were common, also, in our large cities where drainage and cellarage gave a dry subsoil and the surface was more or less sealed by street paving; and these cases also, were of a remitting or sub-continued form. They were common in certain districts of the country in the winter season where the theory of a malarial miasm exhaled into the atmosphere and inhaled into the lungs was inconsistent with their existence, inasmuch as the frosts of the season or a thick covering of snow should have imprisoned all such exhalations; and these cases, also, were found to be severe rather than mild. But in all these instances of serious malarial disease without malarious soils to account for them, the drinking water used was not above suspicion, and in many the prevalence and aggravated character of the sickness was proportioned to the amount of vegetable impurity in the water. On the assumption that the water was impregnated with the malarial essence, these obscure cases ceased to be obscure. But this is not an assumption, for there is a groundwork of observations to support it as solid as that which sustains the theory of aërial transmission. Many years ago a well-known medical investigator reported the occurrence of pestilent malarial fevers among troops on a transport that had been supplied with marsh water. The evidence was so strongly guarded at every point that no doubt could be entertained as to the causation of the fever among these men. Since then dangerous fevers have frequently been referred, on more or less satisfactory testimony, to malarious surface waters; and it is notable that the disease when introduced in this way is always of a more aggravated type than when caused solely by exhalations,—the poisonous water appearing in a general way to be a more concentrated and deadly agent than the poisonous air. Moreover, and this is of grand importance from a preventive point of view, the prevalence of these fevers has decreased with an improvement in the water supply. The remittents of our Western territories have declined in frequency and virulence since the country became settled

and a better water supply was found than that of the ponds, ditches and tanks used by the early overland traveler and settler. The evidence from India is very explicit on a similar decline of the pestilential fevers. Recent reports from some of the most unhealthy districts show an extraordinary change in the insalubrity of the country coincident with the procurement of a supply of drinking water from deep and carefully protected wells. Along the base of the Himalaya Mountains is a broad strip of marsh and forest land called the Terai, which for many years has been uninhabitable owing to the prevalence of malarial fevers. Continued efforts were made by the Government to reclaim and populate this tract, but only with partial success. The strife between enterprise and malaria was carried on, but at the expense of a fearful sacrifice of human life, until recently when the construction of deep masonry wells has permitted positions to be held which a long experience had pronounced uninhabitable. The natives have for ages believed in the transmission of the fever by means of the surface water, and this belief has at last been accepted in its entirety by the Government, and, as reported, with beneficent practical results. Villages that were formerly unhealthy have ceased to be so, and the change has been sharply defined and contemporaneous with the construction of masonry wells. These experiences fully support the evidence brought by Professor Parkes from the Crimea to the effect that the villagers there who drank surface water had fever all the year round, while those who drank well-water had fever only in the summer and autumn.

All the observations and arguments hitherto advanced in favor of the transmission of malarial disease to the human system by means of the water supply have equal force on behalf of filtering the surface waters that are to be used for drinking purposes. In no instance has malarial disease been traced to the use of well-water untainted by a direct inflow from the surface. Dangerous malarious waters from marshes and other soils rich in vegetable decay leave their noxious constituents behind them in percolating through the soil, and appear in the well as pure and non-malarious waters. Filtration is therefore capable of removing from a surface water the essence of the remittent fevers that may be present in it.

This brief review of the pathogenic relations of the animal and vegetable matters that find their way into our running streams, under the conditions of the present time, teaches us how a certain proportion of the sickness and mortality now prevalent in our growing settlements may be avoided. Spring water issuing from an unsullied soil is destitute of morbid qualities. Nature is bountiful and provides for all the needs of creation in the cyclical repetition of her processes. The waters rise from their great store-house under the influence of the solar heat. They pervade the atmosphere, and massing from time to time, are precipitated, carrying with them the accumulated impuri-

ties that would otherwise soon render the aërial ocean turbid and unfit for the support of life such as ours. They flush the surface of the earth, freshen its verdure and carry into the rivers all the detritus of animal and vegetable life. The river-water is nature's sewage, and its destination is the ocean. The rain-water becomes impure in carrying out the purpose of its fall in the economy of nature; but all its impurities are removed from that part of it which penetrates the soil to feed the springs.

The experience of all the ages testifies to the purity and desirability of the spring supply. When the Israelites were famishing in the Wilderness they obtained manna from Heaven, but their water supply came from the rocks of Massah and Meribah when struck by the rod of Moses.

Under the conditions of our modern civilization it seems impossible to bring the spring water in its pristine purity to our homes, but it is only a question of money and an intelligent and watchful superintendence to have a water which will be its equal in wholesomeness. Animal matter with its typhoid possibilities must be excluded by the selection of a suitable source the area of which must be afterwards protected to the full. But the most careful surveillance will fail to exclude the malarial possibilities associated with the vegetable matter of an otherwise healthful surface. To remove these nature's process of filtration must be imitated. Thus only will a water be obtained free from the danger of typhoid fever on the one hand and of malarial disease on the other,—a pure, clear and wholesome supply, which, by preserving the community from unnecessary sickness, will in a short time amply repay the expenditure involved in its introduction.

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#### XXIV. The Quality of the Water Supply of Philadelphia as Tested by Vital Statistics.

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By RICHARD A. CLEEMANN, M. D.,  
Member of Board of Health of City and Port of Philadelphia.

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Chemists have attempted to define a standard by which water as a source of supply for drinking purposes should be accepted or rejected, but thus far without conspicuous success. As late as ten years ago high chemical authority declared "that the Schuylkill water is about as good a water as one might wish for a large city," while a year before the same authority speaking of course through a different mouth-piece, found the water occasionally "totally unfit for use," and opined that unless some precautions were taken the visitation of some epidemic was certainly to be expected.

These are certainly very diverse views, but their discrepancy need not astonish us if we reflect that the most that chemistry can inform us with regard to an impure water is, that it contains or has contained an undue amount of organic matter. Whether the organic matter is animal or vegetable cannot be declared, and even if it is quite probable that the contamination is from animal sources, the further question whether this animal matter is harmful or harmless is still in abeyance.

Yet the chemical analysis of water is by no means to be despised; for though, as intimated, the information it gives cannot lead to certain conclusions, it may serve to excite a suspicion which, followed up by research in other directions, will determine the rejection of an unwholesome water.

Sanitarians have come to consider the history of a water as of more importance than its chemical analysis; for laying aside the uncertainty of the precise nature of the organic pollution which chemistry may detect, now, in the reign of the germ theory of disease, it is believed that the disease-bearing microzemes may be borne along, in the waters of a river, for instance, long after the organic matter with which they were accompanied at the outset have been eliminated by aëration, subsidence or dilution. Chemical tests are blind to these morbid atoms, so that it is possible that a water to analysis chemically pure, may yet be a most dangerous article to be ingested.

The analyses of Dr. Charles M. Cresson, Albert R. Leeds, Ph. D., and others having demonstrated a threatening amount of organic matter in the waters of the Schuylkill; the history of the river water as it flows from its mountain sources to our reservoirs has been carefully studied. The latest research in this direction which I have seen, is the "Report of a Sanitary Survey of the Schuylkill Valley," made by Assistant Engineer Dana C. Barber, under the direction of Col. Wm. Ludlow, late Chief of the Water Department of Philadelphia. From this carefully prepared report we learn that the river Schuylkill, in addition to the pollution of its waters in its upper portion, with a total drainage area of 1,863.9 square miles, receives in a distance of 60 miles from the city of Reading to Fairmount dam, the water closet drainage of a population of 22,000 souls and the waste water drainage of 63,000, besides the refuse from scores of manufactories, drainage from cemeteries and the like.

This is not pleasant reading; it convicts the beautiful river, by circumstantial evidence, of murder. Now, in this extremity, can we bring any direct testimony to bear on the case through a study of vital statistics? There is a homely adage which says the proof of the pudding is in the eating; perchance the test of the water is found in the drinking.

An impure supply of drinking water is said by those who have

studied the subject to have the general effect of sapping the constitution of those who use it, making them less resistant to the inroads of disease of whatever kind, an effect reflected in a high general death-rate.

During the last fifteen years (1871-1885 included) there have been 267,603 deaths recorded in the city of Philadelphia; this mortality gives, according to my calculations, a death-rate for the city of 21.87 deaths per thousand inhabitants living, a rate only fractionally different from that of London, England, which was, during that period, the healthiest large city in the world. It is difficult to reconcile this rate with the theory of a grossly polluted water supply. But I have gone a step farther (Table A), dividing the same period of fifteen years into lustra of five years each. I find for the first lustrum a rate of 22.79 deaths per thousand inhabitants living; for the second, 20.63, and for the third, 22.26. From these figures it appears that the increasing impurity of the water is not reflected in an increasing death-rate. This actually decreased for the second period though it increased again in the third, though not then rivaling that of the first period. It is only fair to say, however, and this is an instance of the difficulties met with in analyzing vital statistics, that a great part of the irregularity in the above ratios is due to the disturbing influence of the varying number of deaths from small-pox; if we eliminate these the respective death-rates for the several periods will be 21.62, 20.37 and 21.85. Here there is a slight increase in the death-rate of the last lustrum, but, as there was a much larger falling off in that of the second, no definite significance can be attached to it from the point of view of a deteriorating water supply.

But, a critic may remark, though the lethal influence of the water may be hidden in the general death-rate, it will surely come to light in an increased zymotic mortality. To meet this objection I have calculated the ratios of the number of deaths from zymotic diseases to the number of deaths from all causes during each of the five-year periods already named; they read in chronological order as follows: 25.62, 22.00 and 23.09, given an even more marked diminution in the rate of the last period as compared with the first than was found while considering the general death-rate only. If, however, we eliminate the disturbing influence of small-pox as before, we discover at last a progressive though slight increase in the zymotic death-rate as follows: 20.48, 20.82, 21.24.

But is this increase due to a higher death-rate from those diseases in the zymotic class which are believed to be made more fatal by foul drinking water? To examine this question I have made a brief study of the deaths recorded from such diseases, namely, typhoid fever, diarrhoea, dysentery, cholera morbus and cholera infantum. Along with them I have considered the deaths from "enteritis," including under this term the deaths classified in the health officer's report, as

from inflammation of the stomach and bowels, and congestion, hemorrhage and ulceration of the bowels. For a special reason, which will appear hereafter, I have included the deaths from malarial fevers also. (Table B.)

Now, the combined death-rates of these diarrhœal diseases (expressed in the number of deaths to the 10,000 inhabitants living, instead of to the usual number 1,000), read 29.29, 25.80, 26.62 for the three five-year periods beginning with the earliest and proceeding in order. The decreased death-rates in the later periods is not in accord with the theory of a drinking-water becoming more and more impure from year to year.

Of the individual diarrhœal diseases, diarrhœa, dysentery, cholera morbus and cholera infantum have each markedly decreased in fatality during the last fifteen years, while typhoid fever, malarial fever and enteritis have caused many more deaths.

From the circumstance that the very large majority of the deaths classified under enteritis were gathered from under the heading, "inflammation of the stomach and bowels," and the further consideration, which I established by looking at the records of the health office, that the deaths under the latter caption were in more than half the cases of children under two years of age, and occurred chiefly in the summer months; from these considerations, taken in connection with the coincidence in the last two lustra of the decrease in the recorded number of deaths from cholera infantum, it is not unreasonable to suppose that some physicians use these names of disease as interchangeable terms. If this is true, the gain in the number of deaths from enteritis is balanced by the loss on those from cholera infantum; though indeed if the deaths from both causes are added together, the sum gives still a lower death-rate from these combined diseases than obtained ten years ago.

Therefore, the point arrived at after this brief survey of statistics is this: That with the exception of typhoid fever all diarrhœal diseases are less fatal in Philadelphia now than they were from ten to fifteen years ago. The deduction is that the Schuylkill water is more free from disease-bearing pollution than it has been in the past, unless possibly as regards the poison of typhoid fever.

But some one may say, that is the capital point; it is the prevalence of typhoid fever which condemns the water supply. Yet typhoid fever causes a good many deaths in some other cities where there is no suspicion of a polluted water supply. There is, however, I believe, a widely spread though erroneous opinion that Philadelphia is afflicted much beyond other large cities in this country from the dread scourge of typhoid.

Let us examine for a moment this point. Take at first the city of New York, the city most closely allied in number of inhabitants and general climatic conditions to Philadelphia. Looking over a comparative

table of vital statistics prepared by the health department of the former city for the year 1883 (the latest I had at hand), I found the number of deaths from typhoid fever in New York city set down as 471. For this year the typhoid mortality in Philadelphia was 579. Considering the larger population of New York, about one-third more, this appears at first sight very serious in Philadelphia. But looking at another part of the New York report I discovered under the heading "Remittent, Intermittent, Typho-Malarial, Congestive and simple continued fevers," 525 additional deaths recorded. Now in the Philadelphia mortality list the deaths from typho-malarial and continued fevers are classed and counted along with those from typhoid. It seems to me fair to presume that the death-rate from remittent, intermittent and congestive fevers does not differ very much in the two cities, and under this presumption a fairer comparison of the typhoid mortality of the two cities is obtained by placing together for each city the deaths as recorded from typhoid and malarial fevers. The number of deaths from typhoid fever plus malarial fevers in New York in the year 1883 was 996, and in Philadelphia 691. These figures, estimating the population of New York at 1,317,691 inhabitants and that of Philadelphia at 967,641, give the combined death-rate from typhoid and malaria fevers in New York as 7.55, and in Philadelphia 7.61, almost identical values. From the same report I found against a mortality from typhoid fever alone in Philadelphia of 6.38; Chicago had one of 6.22 and Boston one of 5.17. Philadelphia is not then so very far ahead of some other large cities of this country in typhoid mortality, and for the year quoted, which I have not taken as an exceptional one, the death-rate from typhoid fever was about the same in Chicago and Philadelphia, though the water supply of the former city is considered to be ideal in its purity. Is there any other general cause more likely than contaminated water to produce the typhoid mortality of Philadelphia? Discussing this question in a report on meteorology and epidemics, I made several years ago, I claimed that the unequal distribution of the deaths through the different wards of the city, giving the appearance of a large number of small local invasions of the disease was opposed to the view of typhoid-poisoned water, which should, in a large population, quite equally distribute the deaths among the several municipal divisions of the town. It seemed to me more probable that the custom of storing excreta, instead of removing it by an efficient system of sewerage, was the cause of the evil.

Dr. Henry Leffmann, in an address before the County Medical Society, going over the same ground for the typhoid mortality of last year, also rejected the theory of typhoid contamination of the general water supply. The final conclusion is that the study of vital statistics negatives the idea of the pollution of Schuylkill water.

Now, gentlemen, what has been my purpose in reading this paper?



To demonstrate as absurd the present agitation in regard to the pollution of the Schuylkill water? Not at all. But from my position in the Board of Health of Philadelphia, I have been asked more than once by persons convinced of the impurity of our drinking water to give them statistics to prove that fact. I have replied that statistics would not show this; but as the question is still urged, I have made this demonstration; but I need not tell practical sanitarians that statistics are gross machinery to sift out the etiology of diseases.

But I had another object in view and that the chief one. To combat feebly it might be, yet earnestly, the spirit of exaggeration with which the impurities of our drinking water are spoken of.

Thanks to the industry of sensationalists, the water of Philadelphia has become a by-word of reproach, a very stench in the nostrils of the nation.

I trust that I have at least shown you that such utter condemnation is entirely uncalled for. Yet it is a duty which we owe to ourselves, as well as to those who come to visit us, to put the purity of the water supply beyond doubt; it should be like Cæsar's wife, above suspicion.

It is, therefore, much to be desired that the counsels of those who urge a new supply from the head waters of the Delaware, or other equally pure source, will prevail.

TABLE A.—Deaths in Philadelphia, from all causes, from zymotic diseases, and from special zymotic diseases; with population for the years 1871-1895 inclusive; and the same consolidated for the three periods, 1871-1875, 1876-1880, 1881-1886.

YEAR.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1871-75.	1876-80.	1881-85.
Population, . . . . .	601,317	708,612	725,907	743,202	760,467	777,792	795,067	812,382	829,677	846,980	863,000	880,539	897,041	927,996	949,431	3,629,535	4,061,938	4,539,006
Deaths from all causes, . . . . .	15,495	13,967	15,294	15,236	17,105	13,862	16,004	15,743	15,473	17,711	19,515	20,059	20,076	19,990	21,362	52,739	58,323	101,041
Deaths from zymotic diseases, . . . . .	4,173	6,299	3,124	3,005	4,560	4,771	3,699	3,303	2,937	3,810	5,136	4,573	4,763	4,373	4,454	21,201	18,446	23,394
Small-pox, . . . . .	1,565	2,530	39	16	56	407	155	0	6	424	1,336	314	173	35	3	4,256	992	1,861
Measles, . . . . .	41	140	29	117	12	53	69	12	8	106	17	19	58	96	131	339	250	321
Scarlatina, . . . . .	232	168	309	353	1,032	828	379	554	336	290	496	310	561	540	375	2,123	1,867	2,272
Diphtheria, . . . . .	145	141	108	181	656	708	453	464	321	323	437	933	1,006	630	600	1,229	2,274	3,676
Croup, . . . . .	264	234	186	196	429	386	338	338	291	303	317	466	500	589	753	1,861	1,706	2,625
Whooping cough, . . . . .	81	135	95	74	135	88	81	109	103	101	113	63	86	107	144	530	482	513
Typhoid fever, . . . . .	313	341	353	468	400	774	562	404	344	465	645	650	579	682	610	1,880	2,559	3,150
Typhus fever, . . . . .	37	35	31	26	21	27	15	9	1	23	12	8	35	2	1	150	75	54
Erysipelas, . . . . .	57	76	89	73	87	84	77	67	83	63	75	64	85	69	83	392	374	381
Puerperal fever, . . . . .	28	22	23	65	80	54	50	47	41	26	39	22	24	23	41	223	218	154
Dysentery, . . . . .	97	76	73	49	73	78	79	51	60	96	53	72	72	59	53	372	366	314
Diarrhoea, . . . . .	174	179	163	141	151	149	123	121	107	129	141	156	137	142	143	808	629	719
Cholera infantum, . . . . .	829	1,063	1,068	869	962	1,173	960	700	804	891	902	871	873	775	971	5,351	4,547	4,397
Cholera morbus, . . . . .	33	111	67	51	47	35	46	33	27	73	45	64	29	31	44	309	211	216
Malarial fever, . . . . .	59	55	30	51	48	47	40	46	39	49	92	114	112	67	66	237	221	451
Rheumatism, . . . . .	40	31	45	57	53	53	37	49	34	40	57	50	54	44	60	206	213	235
Cerebro-spinal meningitis, . . . . .	44	125	238	89	83	85	56	90	62	73	90	51	50	124	87	570	371	402
Other miasmatic diseases, . . . . .	40	54	77	57	122	109	74	67	106	159	117	102	176	159	166	250	514	720
Enteric diseases, . . . . .	20	24	33	40	24	34	43	34	37	24	46	33	46	54	39	141	172	220
Dietic diseases, . . . . .	44	90	57	52	73	87	51	44	42	34	86	138	101	100	93	321	308	518
Parasitic diseases, . . . . .	0	10	11	10	16	18	0	15	15	9	0	0	0	1	0	47	57	1

TABLE B.—Deaths from the several diarrhœal diseases and malarial fevers with their ratios per 10,000 inhabitants, during the three periods 1871-1875, 1876-1880, 1881-1885, and totals :

YEARS, . . . . .	1871-1875.	1876-1880.	1881-1885.	RATIO TO 10,000 INHABITANTS.		
				1871-1875.	1876-1880.	1881-1885.
Typhoid fever, . . . . .	1,880	2,569	3,160	5.17	6.39	6.96
Malarial fevers, . . . . .	237	221	451	.65	.54	.99
Diarrhœa, . . . . .	808	629	719	2.22	1.54	1.58
Dysentery, . . . . .	372	366	314	1.02	.90	.69
Cholera morbus, . . . . .	309	211	216	.85	.51	.47
Cholera infantum, . . . . .	5,351	4,547	4,307	14.74	11.12	9.68
Enteritis, . . . . .	1,686	1,951	2,331	4.64	4.80	6.25
Totals, . . . . .	10,643	10,484	12,078	29.29	25.80	26.62

#### XXV. Influence of Diet on Health.

By ALFRED K. HILLS, M. D., of New York City.

The first duty of the physician to the public being the prevention of disease, there can be no more important subject for our consideration in this connection, than the "influence of diet upon health;" and none can more fully appreciate this factor than the physician who is constantly studying the causes of disease and their probable prevention.

It is universally admitted that the great majority of non-contagious diseases are due to mal-nutrition; and this is largely occasioned primarily by errors in diet which would be preventable through a knowledge of the relative values of foods as nutrients, and of their requirements for digestion.

The question which I desire to bring before this honorable body for discussion at the present juncture is, *How shall the public be instructed as to "the influence of diet on health?"*

We may answer this query in several ways, and perhaps no single method may be sufficient for the purpose, but the combination of all may accomplish considerable!

The *first* method should be commenced in the home, at the very cradle, but this has many drawbacks, chief among which is ignorance on the part of parents; and here under existing circumstances, the office of the physician comes into view, and leads us to the second plan, which will be entirely dependent upon the physician, and involves time and patience as well as knowledge on his part.

Much can be accomplished on the part of the physician, as we know from personal experience; but neither of these methods would speedily bring that benefit to the great public to which we aim, and thus we

are introduced to the *third* and more important suggestion, viz : That the subject be made a special study in our educational institutions—even to the kindergarten—graded to suit the age of the pupil, and so complete that when a scholar graduates from school, nitrogen will be known from carbon, their relations to each other will be understood, their offices in the human organism will be appreciated, and their association as foods be as thoroughly familiar as the language which they have been taught to speak! The young and impressible mind is ever ready to grasp an idea strikingly presented and forcibly illustrated, especially when it is shown to have a bearing upon health and happiness. Well do we remember an instance in which a man admirably adapted to such work, spoke words to a class of children which never will be forgotten; and they dealt only with the most common habits and duties of every-day life, in a most simple manner, which could be understood by all.

We are well aware that there are some difficulties in the way of our proposition, but they seem to us surmountable; and should the subject meet with sufficient favor at your hands for you to appoint a committee to consider it, we have reason to think that a practical solution would be reached.

Doubtless in the beginning the subject could be interwoven with the text of existing school-books; and in the higher departments, where physiology and hygiene are taught, even to a most limited extent, additions could be made to these text-books, and the subject made interesting and as compulsory for graduation as other less important branches.

We are quite aware of the indifference, ignorance and carelessness which prevails, even in the medical profession, as to the "influence of diet on health," not alone as regards their own individual conditions, but also as to that of their patients; and is to be wondered at that the great public which is not supposed to know much of the "influence of diet on health," should remain in its ignorance, particularly when the medical adviser ignores the subject entirely as one with which he has nothing to do?

Medical colleges of course are expected to provide education upon so vital a subject, and graduates should be required to undergo thorough examination in it.

We regret to be compelled to admit that hygiene holds a most insignificant position in the curriculum of many medical colleges, and if students are examined at all, it is in the most superficial manner, thereby impressing them with the idea of its insignificance.

This could be remedied, in a degree at least, if the colleges themselves could be made to feel their position regarding it; and it is such bodies as the one which I have the honor now to address, which can have the most influence in bringing about this desideratum. The "practice of medicine," as it is termed, or as we prefer to put it—the

*office of the physician*—certainly demands something more than the mere prescribing of drugs. The physician should be capable of advising his confiding patients respecting all matters bearing upon physical conditions, as well as many which may be termed mental in their nature; but few are competent by education or otherwise to attempt it. We think that a system of training in the ordinary affairs of life is greatly to be desired, and that our institutions of learning could organize a department which would be practical and useful, by teaching people *how to live*; and the course should be insisted upon, at least with those who would enter the profession of medicine. Then might we expect the public to entertain a higher appreciation of the “influence of diet on health,” and all allied subjects as well; then would the public health begin to feel a subtle influence which would be most pervading, and which would in time work a wonderful change in our mortality tables, as well as in the happiness of the people.

Ignorance upon the subject of which we are speaking tends, as is the case always under such circumstances, to partial views; and hence we have sects in diet,—as in other relations in life—such as the “vegetarian” and other hobbyists. The great tendency of man is to find a hobby and ride it, oftentimes to death, and the sooner this goal is reached perhaps the better. It is to be regretted that educated men sometimes lose balance and urge, for instance, upon all alike an exclusively nitrogenous diet in health,—for example the meat diet, or a single meal in twenty-four hours, or eating at too frequent intervals, and a host of other extreme measures, which may be excellent in individual cases of disease, but which may have a most pernicious “influence on health” when adopted by such as are in normal condition.

Physiology teaches us and experience proves that a mixed diet is the best calculated to maintain the body in health; and it has been demonstrated that man under ordinary pressure requires nutrition in the proportion of two pounds of bread (made from ordinary white wheat flour), three-quarters of a pound of meat, with one or two ounces of butter in twenty-four hours.

While too much nitrogenous food leads to an excessive amount of urea and uric acid, it is also a well-known fact that animal life cannot be long preserved on an exclusive diet of fat and starches, as the tissues would soon become worn and wasted, and death from inanition would be the result.

There is a mistaken impression in the public mind as to the sources of sugars and their effects upon the human organism. The fact that there are different varieties of sugar, and that they differ widely in respect to digestibility, is either unknown or entirely lost sight of! Sugar—although not entering into the composition of the tissues—appears to play an important part in the production of fat and the development of animal heat; and the fact that *all starch is changed into a low form of sugar*, which is easy of digestion, and upon which

*we should depend chiefly* for our carbo-hydrates, should be constantly urged upon the public ear! Cane sugar which is agreeable to the taste of so many, and is so enticing in its sweetness, behaves as a foreign body in the intestinal canal, until it has been converted into glucose; but this conversion is principally intestinal, the gastric juices producing little effect in this direction. It is evident that the task of digesting cane sugar is not an easy one for the organs involved, and we firmly believe that the "influence on health" of cane sugar is under-estimated, and that the indiscriminate use of it in large quantities, as it so commonly is, is a source of no inconsiderable injury. The substitution of glucose for cane sugar, now we are told becoming quite universal for many purposes, is to be regarded we think as a benefit rather than otherwise.

It should be generally known that one of the most important agencies in the digestion and assimilation of food is *water*, and that seventy-five per cent. of the human body is composed of water, and that four and one-half pounds is daily thrown off by the healthy body, and that a diet largely nitrogenous will tax the system severely, unless a considerable quantity of water be taken for the purpose of getting rid of the waste. It is estimated that a full-grown male adult requires fifty-two fluid ounces of water daily. An organized structure will not perform its function without its due proportion of this agent. The evils of overpreponderance of fluid in the system should be guarded against in the interest of the solid elements, although the dangers from this source are far less than from too little fluid.

It is cruel to neglect to provide children with cold water to drink at frequent intervals, particularly in hot weather, no matter how they are being fed. If the thirst is allayed by this natural diluent, the child may refuse food which is only being taken to relieve the parched mouth, and is not demanded and will not be tolerated as nutrition.

The public must be taught that digestion is a process of solution by hydration; that to convert starch into sugar a molecule of water must be added under the action of a ferment, and that a peptone is produced by a similar process.

It may be truthfully said that the majority care little what they eat, so long as the appetite be satisfied; but they do care to be healthy, and above all that their children should grow up strong.

The multitude will ultimately be attracted by the gain which is to be obtained from good food, rather than the enjoyment which is to be expected in taking it; but they will not appreciate the subject fully until made to *know* that health and strength depend upon diet, that appetite often is subservient to cookery, and that the stomach should not be crowded with pabulum which has reached there through an excessive and unnatural tickling of the palate. Then shall we get rid of excess in condiments, of the dessert, which is an abomination to

our age; and people will learn to eat fruit in its natural state, without the addition of cane sugar.

We feel that the great majority are underfed because of the lack of knowledge of the "influence of diet on health!"

Some are starving on an excessive quantity of improperly selected foods as to quality, while others are suffering from a mistaken notion as to the needed supply.

It is a pleasure to note the constant advance which is being made in the preparation of foods suited to infants, and it is certainly encouraging dietetically to know that mother's milk can be imitated so successfully.

It is also an important fact dietetically, that predigested foods can be produced which are both perfect nutrients and quite palatable as well. These peptones fill an important place in the dietary, even of the healthy, for at times one in health really requires food which shall not tax the powers of digestion; as for instance when one has to undergo severe mental or physical strain, or when one is too tired from any cause to expect digestion to be normally performed. We have used these articles in the place of wine or other alcoholic stimulant, on many occasions with great satisfaction, and they may be taken at bedtime with great benefit as well as with impunity. We look upon them as excellent promoters of the "temperance cause," as well as of the public health in general!

It has been asserted upon eminent authority that the human race is undergoing a great change, a leading manifestation of which is the growing intolerance of alcohol; and we hope it may be true, for wine-bibbing has an important bearing upon health and in many circles is a part of the diet. We do not under-estimate the value of alcohol in its various combinations, both as a medicine and under certain circumstances as a substitute for food; but it should be intelligently prescribed, in accordance with reliable indications, and not be allowed to affect the "influence of diet on health" by reducing the quantity of food required. A person in perfect health doubtless needs no alcohol, and consequently this stimulant should not be resorted to as a beverage, but rather should be kept in reserve for an emergency, when it will prove equal to the task. In a state of health alcohol is liable to interfere with the appetite and with digestion, and it is only in this connection that we propose to consider it for present purposes. The circumstances which have gained for this agent its position in our dietary tables are well known, and belong to the domain of therapeutics.

We have found that the various combinations in which alcohol is found associated require careful study and individualization, and we cannot agree with the inference of some that it is the *water* and not the alcohol and other ingredients of the admixture which is alone to be credited with the power of sustaining life, or of giving that impetus

which nature requires to enable her to stem the tide of disease and to advance in the direction of recovery. It is a well-known fact that distilled alcoholic liquors produce influences upon the sensorium and upon the process of digestion quite at variance with those articles which are the product of fermentation, and this fact should not be lost sight of in our study.

While brandy, whisky, and the like excite belligerency and irritate the mucous membrane of the stomach at the expense of nutrition in those who imbibe them too freely, it is equally well known that wines, ales, &c., even when taken in sufficient excess to produce inebriation excite an entirely different condition of the sensual faculties as well as having an entirely different effect upon the gastric function.

The poor wretches given up to absinthe-drinking suffer from a peculiar train of nervous symptoms, the most prominent of which is epilepsy of a remarkably severe character. The last moments of the the absinthe-drinker are truly horrible. Absinthe, besides alcohol, contains several ethereal oils, of which the most important is the oil of wormwood. It has been often observed that the use of this beverage results in disorders widely differing from those caused by alcohol alone; and the oil of wormwood has produced in animals, tetanic convulsions similar to the epileptiform convulsions which affect absinthe-drinkers.

We regret to say that this habit is taking a strong hold in this country, especially with women; and its influence upon health by decreasing the appetite for good healthful food, is of great importance and should not be overlooked in the consideration of our subject.

Physiological experiments indicate the necessity for a more careful study of alcohol and its relations to the gastric function. It has been found that the digestion was not only retarded by its introduction into the stomach of a dog, but that the secretion of gastric juice was entirely suspended for a time by its use in strong doses. This condition was probably induced by its physical properties as an irritant-corrosive, rather than by any other influence.

These facts should teach us that the introduction of any toxic agent into the stomach in quantities sufficient to paralyze their natural functions, is entirely out of the question from the standpoint of scientific practice. Alcohol when taken upon an empty stomach, first increases the appetite; but if the indulgence be continued, it gives rise to indigestion and entire loss of both desire and relish for food, together with gastric irritation and intense thirst, although in some instances not a drop of water can be retained.

Because of the profound influence of alcohol upon the functions of digestion and assimilation, it is incumbent upon us to trace out its workings in this all important sphere with especial care. The pathological lesions dependent upon a long-continued use of alcohol are too well known to require consideration for present purposes.



We feel that our subject is too immense and pervading, to do it justice in the few short sentences which we have aggregated, but the purpose of our essay is only to offer suggestions which may bring out discussion which I trust will follow, to the end that the "influence of diet on health" may be more fully appreciated.

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#### XXVI. House and Yard Ventilation.

By W. C. VAN BIBBER, M. D., of *Baltimore, Maryland.*

Much has been written and published about house ventilation for both city and country dwellings, yet comparatively little has been said about the ventilation of back yards, and premises, and alleys.

If ventilation means "to open or expose to the free passage of the air or wind—to cause air to pass through"—then it is plain when it is intended to accomplish a proper ventilation for the purposes of health, the foul or damaged air in a house must be replaced by pure air. In the cities and towns throughout our country, as things now exist, it is a problem where to obtain this pure and fresh air. The yards, premises and back alleys around the houses, are not now attended to as they should be to effect this purpose.

I am personally quite familiar with this subject in many of the cities, towns and villages in the States of Pennsylvania, Maryland, Virginia, New York, Canada, Ohio, Louisiana and Mississippi. The yards attached to houses, are, for the most part, from fifty to one hundred and fifty feet deep, more or less, and are generally surrounded with decaying board fences, from six to eight feet high; and these yards have been, as a rule, the receptacles for all thrown-away matters of a family for a long time. The exhalations from such yards are bad, and if an atmosphere, laden with these impure emanations, should be introduced into a cleanly house, the effect must be injurious. It is generally believed that the filth-pestilences—those diseases caused by micro-organisms—are brought about in this way. Thus it will readily be seen that whilst making provisions for ventilating the houses, if the yards, premises and alleys are neglected, matters may be made worse, and thus ventilation be deprived of all its benefits.

In a report made to the Maryland State Board of Health, in 1878, I said, "Encamped upon an eminence in the State of Mississippi, I once beheld a beautiful village, situated in a plain, upon the south bank of a gracefully sweeping bayou. Cluster roses and creeping plants and flowers completely covered the roofs of the houses, so that, in the early dawn, it looked like a fairy city of enchantment. Who would have supposed it was so fair without, and yet so foul within? Its high, board-screened, undrained, level and water soaked yards, were filled with rubbish, dirt, and things offensive and useless, which sheer care-

lessness had allowed to accumulate, and a filth-pestilence was even then rapidly filling its cemetery." This town was Port Gibson, the capital of Claibourne county, Miss. ; and I have seen many such towns, similarly built and fashioned, in all States which have been mentioned. Indeed, it is well known that cities and towns having such yards as described, are not only found in all the other states in our union, but also in every other country on the earth. The older the towns and the warmer the climates, the worse these nuisances.

It may not be polite to criticise our hosts, and those who entertain us so agreeably, but yet if done in the way of public spirit it may be excusable and even considered a kindness. Go into the back rooms of many of the houses in this city on a sultry summer's day, and then tell me where the pure air required for a proper ventilation can be found.

Obstructions to the free circulation of the air, in the form of houses, large and small, constitute cities; and, of course, must necessarily exist wherever a city is built. But the high, tightly closed yard fences, which effectually obstruct surface ventilation, form alleys, and hide such an abundance of filth, may soon, I trust, be done away with forever. The curb-stone, a flower-bed, an iron railing, or a slatted wooden fence, may be most advantageously substituted for them. Beauty, cleanliness, healthfulness and security to property, will be increased by the removal of these close-fitting yard fences.

This is certainly a most important matter, and a needed improvement; because the many small yards, thus fenced off, make an immense aggregate surface. If the curbstone can be made, by statute law, an equal protection to the lock upon a high board fence, being lighter and hence more secure, as well as more cleanly and beautiful than the old fashion of which we now complain, then the open yard system will prevail, and soon be brought into popular favor. Already in this city, Philadelphia, several public-spirited and distinguished citizens, notably Mr. Joseph Harrison, have erected elegant and commanding rows of houses and adorned the yards in the rear with beautiful gardens without the obstructing partitions. Two instances to illustrate this improvement may also be cited from the city where I live (Baltimore). Upon the grounds where the Johns Hopkins University now stands, there were formerly many houses, and all the yards were enclosed with the conventional eight-foot-boarding. The enlightened president and trustees of this advanced institution, among the many other benefits they have conferred, have removed these fences and substituted curbing and flower-beds. The secretary of the Maryland Board of Health, Dr. Chancellor, has made a similar improvement for the yard of his dwelling.

Many other examples could be given from other cities and towns north and west, or throughout the country generally. The object of

this paper is to call the attention of this convention to the importance of these examples, and to encourage the enactment of statutes which will foster and compel such an improvement. If the citizens of Philadelphia, Harrisburg, Lancaster, York, Pittsburgh, and the hundreds of smaller towns throughout the Keystone State, will seriously and industriously combine to alter this old-fashioned nuisance in the building of their towns, I can think of *no one thing* which would be likely to add more to the general healthfulness and pleasure and domestic pride within their State. Besides removing thousands of ugly obstructions to the wind, blowing over a naturally healthy soil, the children of future family generations would hereafter vie with each other, and with their neighbors, in planting a flower or a tree to adorn those premises into which their parents, by pulling down these fences, had already allowed the winds to enter and the light to shine.

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**XXVII.—Forced Ventilation vs. Natural Ventilation (or Ventilation by Heat.)**

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By **RUSSEL THAYER, C. E.,** *of Philadelphia.*

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Air to be perfectly healthful must be pure.

Air is contaminated by many causes, most of which originate from man himself and his surroundings.

As man inhales the air that envelopes him, to keep the man supplied with pure air, you must move the man or move the air.

To move either requires an expenditure of force and it therefore depends upon the relative economy in expenditure, as to which costs less to move.

But the man may from necessity be unable to be moved; then the problem is narrowed down to the consideration of the best means for moving the air.

Air unconfined needs no artificial impulse, but air that we breathe is far more often confined. Hence again our question is narrowed to the consideration of how to move confined air. Confined air can be moved by heat acting expansively and directly upon the air as when we use a fire-place or heated flue. We can apply the heat to water, and carry the steam to the vent flue where by the condensation the heat is applied to the air column to be lifted.

In either case we are said to ventilate by heat.

If however, we go a step farther and apply the steam to move a fan which in turn moves the air we are ventilating by mechanical means.

In any case we employ power, and consume fuel to obtain the power, and it is finally narrowed to a discussion of fuel consumption and power application in the consideration of the question, which

tends to produce the most satisfactory results in ventilation, a fire or a fan.

The friends of heat ventilation and the enemies of all ventilation arraign fan systems on three charges, viz :

*First.* As costing more.

*Second.* As being more complicated.

*Third.* As requiring more skilled attention.

The chief claim made by advocates of fans "that they do or can be made do better work" is tacitly allowed. And this shows the inconsistency of the general public, for in arguing a question before an association of this character it certainly is hardly to be expected that the question of *cost* should be given so much prominence. But in defence the writer appeals to your own experience. Is it not very often the case that the first question in regard to any sanitary appliance is, "How much does it cost?" This is no exception and in attempting to place before you the relative merits of fire and fan ventilation it is impossible in any spirit of fairness to pass by unnoticed the objection so often urged against fan ventilation, the great cost.

Cost or money outlay can in this instance be considered as first the outlay for the plant, and second, subsequent outlay for maintenance.

A comparison of figures will probably show that the outlay for fan plant is generally, if not always, in excess of that required for fire ventilation. And this may be ascribed to two causes. First, if steam heating is employed, the unwillingness of the contractor to allow proportionately for parts rendered unnecessary by use of fan, and further the retention of fire-places as matters of ornament even when unnecessary. And, second, because the first cost of fan and motor and necessary equipment is considerable. A third reason for this might be found in the fact that heat ventilation is good, bad or indifferent, according as it is cared for or slighted, and that each diminution is attended with a decrease in cost, so a heat ventilating system which as first laid out is quite elaborate is by successive restrictions, omissions or changes reduced almost to a nonentity, yet always retaining its name and full title; while with mechanical ventilation there is a limit to omissions and restrictions, for even if all else be removed you must have a fan and motor to make your system "mechanical."

Comparisons therefore, are often unfairly made between inefficient specimens of heat systems costing little, and well laid out fan systems, always in point of cost to the disadvantage of the latter. Critics are often unjust in their strictures. For example, a system of fan ventilation was recently put in a public building in Chicago at a cost of nearly \$30,000, an enormous amount the critics claim.

Bearing in mind that owing to the absence of any adequate provision of flues, two-thirds of the outlay was for galvanized iron pipe to supply these deficiencies, the remainder is no very great sum considering the duty required, viz: 36,000,000 cubic feet per hour.

In another case a ventilating company offered to ventilate a large office building for \$6,000, when the plans were first drawn. The same company, after the completion of the building, has been called upon to do the work, but at a cost to the owners of \$15,000, and that with several floors omitted.

The question of first cost is easily and economically settled provided experts have access to the plans at the beginning, for no system can be cheap that must be placed in an occupied building.

This charge of excessive cost of plant originated at a time when ventilating fans and machinery were crude and the loss of power enormous. People who to-day repeat this forget that ventilating machinery has been keeping pace with all other devices in the march toward perfection. A horse-power to-day will move 15,000 cubic feet of air per minute and with machines utilizing 80 per cent. of the power applied.

The cost of maintenance has been most carefully examined. By tests, for the accuracy of which the writer can vouch, the following results were obtained: The flue system was both horizontal and vertical. The air or escape shaft was 40 feet high and 38 inches diameter. The temperature of external air averaged 18° Fahr. By the use of a fixed quantity of coal a *fan* removed and discharged 875,000 cubic feet of air per minute, a grate fire 425,000 cubic feet, a steam indirect stack 360,000 cubic feet. All modern tests with improved machinery prove that, pound for pound, fuel will do twice the work in moving the air, when used to generate power for use with a fan than when applied directly. The second and third charges, as requiring more skilled attention, because more complicated, can be considered together.

The tendency in modern buildings is to complicate the system of heat ventilation, if used, and to simplify the system of fan ventilation. As buildings have grown into such enormous proportions, the systems of heat ventilation are found to be inadequate to satisfy the demands of an educated public, when applied in their simpler forms. So they have grown by constant additions and modifications, while the latter or fan system, at first regarded with doubt by even its staunchest friends, and therefore hedged about with every safeguard, has been found after experience to require none of these complications, and to-day is better in fact with the fewest possible parts.

As to requirements of skilled service, there can hardly be a question, for with mechanical devices almost, if not quite automatic, and with the greatest simplicity in arrangement and construction, there cannot possibly exist the demand for skilled attention which is so often insisted upon.

But there are other advantages peculiar to mechanical ventilation which can be best shown by comparison.

All systems of so-called natural or heat ventilation depended for their efficiency upon a difference in weights; for as a confined volume

of air is heated, hence rarified, the column becomes lighter than a corresponding column of outside air. Thus the force of gravity is called into action, and the heavier outside air rushes in to displace the lighter warm air. With tall chimneys and intense heat, this difference seldom amounts to the fall of more than a few feet. The suction power therefore is seldom strong and must be carefully nursed in all the modifications of branching flues. Extreme care must be taken in fixing dimensions, proportioning areas, avoiding or providing for bends and turns, lest the distant points where the suction is to be felt are slighted. How easily, with such demands for splendid engineering, is it for inexperienced or incompetent people to make fatal mistakes.

Then again, heat ventilation is not elastic. Designed with reference to certain conditions within and without, a change or modification of any one of the elements disarranges the system. The flue may be too small or too large, too short or not of the proper shape, proportions or location, or not properly connected. The temperature outside will constantly vary and the duty done by the shaft will vary accordingly. Then again, the wind may be strong from the east, west, north or south, and the exposure of each room will effect the volume of discharge. The heat may be insufficient to lift the air column, and the rooms may ventilate into each other. The hot air flues may blow cold as well as hot air, and down draughts be found where up draughts were intended. The air may be heavy and moist and sticky, and the ventilation correspondingly sluggish. With all of these possibilities is it any wonder that in spite of lavish expenditure it is so difficult to find a perfectly ventilated building, ventilated by heat?

If it were possible to correct the rise in outside temperature by extending the flue by some means, by expanding and contracting it as the demand for ventilation increased or diminished, then and not until then would it be possible to arrange a perfect system of heat ventilation.

But how is it with a correctly placed fan? Depending simply upon the power supply, the speed can be changed and by it the volume taken from or given to any room, however distant, can be varied. A variation of temperature or an increase of moisture cannot affect it, and at the same time the ventilation of the building is entirely independent of the movements in the extraneous atmosphere. There is nothing in the condition of the elements to be feared. With the same care as to details the fan system is immeasurably superior, because more positive and reliable. If details are neglected the heat system fails altogether, while the fan will still do work. What would the ordinary heat system do in a pipe that made nine (9) distinct separate bends in a length of sixteen (16) feet? And yet three rooms to-day are ventilated by such a pipe from a fan, with a variation of less than one foot a second from their more favored neighbors.

It is difficult or useless to ask of any system of ventilation perfect

work, without providing suitable access. The architect, driven well nigh to desperation by the demands of the style or use of the building, or worse still the whims of the owner, and not correctly informed as to the facts, rejects mechanical and turns to heat ventilation as the only system possible "in this case." Any draughtsman can lay out series of flues in a building plan for heat ventilation, but few can make them work. No architect who has consulted an expert worthy of the name, but has found that the system of mechanical ventilation could be varied to suit requirements, and if mistakes were made in size, if unlooked for changes were demanded at the last moment, the fan could still turn a little faster, work a little harder, and do a little more than at first asked or expected. The net result may not be what it should be, but there will still be *results*.

It cannot be denied that there are some few places where heat ventilation may be more economical and the only available means to be used. The line, however, of demarcation can be easily drawn, for when by reason of size or peculiar arrangement, *any complication* enters into the problem, then the economy of heat ventilation disappears.

There has been within the past few years a rapid and radical change in public opinion as to the necessity for ventilation and the best means of obtaining it. This has not been accomplished without great effort nor without much wild theorizing. And while to-day there is much to discover experimentally, it can be safely claimed that the entire theoretical field has been well investigated. In this, as in many other departments, where theory and experiment go hand in hand, experiment has lagged, while theory has run wild. We have rested content with the experimental research of others. We have in some cases taken another's works and built our theories upon them, as facts, only to find at last that the so-called facts were veriest fancies.

Atmospheric conditions, methods of life, and plans of construction differ essentially in some important particulars in this country from what we find abroad in many places, and it is more wise to carefully weigh and consider these important elements in dealing with the intricacies of the problem of ventilation, as applied in our own country, than to rely too largely upon experiments and data found in foreign treatises having reference to the subject under consideration.

That we need pure air, is an axiom in the minds of most people. But how much do we need? How seldom is the question asked by the owner of a building? Is it not more often the case that the inquiry is made, how little can we live upon? and annoyed by the estimate of cost, he looks longingly back to the golden period of the past, when, as they say, there was no ventilation and no experts and no sanitation.

In the ventilation of our buildings let us avail ourselves of the power which is perfected for our service. In this question, as in

others of a like scientific nature, the mind of man has been able after careful thought and investigation to control matter. Prime motors can now be obtained suitable for this purpose of great variety, efficiency and economy of operation. Fans are made which grasp the air with which they come in contact and drive it with perfect reliability to the points where it is required. The mechanics of the problem are simplified and understood, and by using *forced means* of ventilation either on the "vacuum system," or "plenum-vacuum" combined, we are assured of an absolute certainty of results, which in my judgment and experience cannot be obtained by any other means.

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**XXVIII. "The Majesty of Law in Sanitation."**

By J. ANDREWS HARRIS, D. D.,  
Rector of St. Paul's Church, Chestnut Hill, Philadelphia.

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This paper is not unnaturally written from a clergyman's point of view. It begins with the postulate that there is a God. It assumes nature to be the outcome of God, and to be governed by His laws. It understands this convention to be the means of increasing popular knowledge on important subjects, not only by the presentation of original study and thought, but also by a popular presentation of what others have thought and said,—thoughts recorded in documents not perhaps generally read and yet which ought to be widely known, and it seeks rather to collate than to originate.

There a question recorded in a wonderful book written long ago,—the book of Job,—and one to which a negative answer must always be given. The question is this: "Canst thou by searching find out God? Canst thou find out the Almighty unto perfection?" The answer is "No." And yet the men of the present generation, inheritors of the gropings of past ages, know more about God than the elders did. They have learned this much, if they have learned nothing more; that he is the God of *law*, not of caprice; that, from the movement of myriad suns, each with its planetary system about a central point in infinite space, to the growth and propagation of microscopic, "bacteria," all is regulated by *law*, inexorable in its functions, faultless in its operation. God never breaks his laws; he never permits them to be violated with impunity. They operate in the material universe with inevitable accuracy; with the same accuracy they work in the spiritual universe. God never changes his mind,—let us thank God for that; it is the one element of stability amid what, in our ignorance, seems often to be so fluctuating. No grander statement of the fact was ever made than that which describes



him as "the Father of light, with whom is no variableness, neither shadow of turning."

Men have been a long time finding out this truth, even with nature spread out before them, even with "revelation" in their hands; and no wonder, for nature is vast, and revelation has been but a series of slow progresses, and law is complex. Its complexity has often obscured, does often obscure the secret of its working. But even through apparent exceptions, when men get to understand them, only establish the majesty of law. Science,—by which is meant *knowledge of law based upon observation of facts*,—is making this more and more evident. Theology—by which is meant the *rationale of Diety and his relations to man*,—seems not yet to have its feet firmly planted on the rock upon which science stands; but it is approaching that foundation; its feet are upon the outer circle of it; and when it shall have advanced to where science stands, then will be recognized the likeness of twin sisters, and then "shall be brought to pass the saying that is written, 'Mercy and truth are met together, righteousness and peace have kissed each.' " Each understanding the other's language, both bowing reverently before the God of law; and their blended voices shall ascend in tuneful harmony, eternal as the ages, to the throne of God in the everlasting refrain, "Great and marvelous are thy works, Lord God Almighty; just and true are thy ways, thou king of saints. Who shall not fear thee, O Lord, and glorify thy name? Thenceforth will be impossible the saying, "Where a scientist is there is an atheist; where a theologian is, there is a fool."

Under this view of things a "miracle" will be seen to be, not a *breach* of law through Almighty caprice, but the outcome of a *newly understood combination of laws*, or of *an as yet unknown and higher law*, by divine power to effect certain purposes. Under this view of things, just as surely as one believes that he cannot "by searching find out God," that he cannot "find out the Almighty unto perfection," so *and therefore* must he believe that he cannot always comprehend or explain the *extent* of his power to effect results by combinations of laws in ways as yet unknown to man, or the extent of his power to effect results by the operation of a law higher than those yet known. Under this view, the question will not be "is a miracle possible?" but "is there evidence that it was actual?" Under this view if in times of pestilence litanies go up to God for salvation from its terrors, it will be not to supplicate God to break his laws because men have been ignorant of them, or, knowing them, have been foolish enough to break them; but it will be to implore him to give a better knowledge of those laws by an enlightenment of the understanding and to give the courage of humility to reverence and keep them.

For the growth of a single blade of grass is as truly a "miracle," *e.*, the operation of laws which evidence the presence of *divine power* as was the giving of sight to the blind or the raising of Lazarus from

the dead. But *all*, the effect of *law*, in the one case proximately understood, and therefore called "natural," in the others absolutely mysterious as yet, and therefore called "super-natural." For, in very truth, the dividing line between "the natural" and "the super-natural" is the line of our ignorance of the law of the latter, and our assumed knowledge of the law of the former. To believe anything else is to undermine any intelligent faith in "the Father of light, with whom there is no variableness, neither shadow of turning," faith that "God is all in all."

As a single illustration of what is meant, take the case of what has been recently accomplished by a "combination" of known laws of forces,—the sending and receiving of messages by telegraph on a train of cars running at full speed. Fifty—certainly one hundred—years ago, this would have been considered a "miracle" in every sense of the term, *incomprehensible, inexplicable*, and in the most advanced scientific judgment *impossible*. Indeed, in some parts of the world it would have subjected him who accomplished it to the faggot and the stake, as being in league with the evil one. It is no less *wonderful now*; but we know that it is the result of the operation of *law*. Then it would have been counted "super-natural;" *now*, it belongs to the sphere of the "natural;" although *what* electricity really *is* we know as little as we know *what* the *life* in a growing blade of grass really *is*. There are all grades of misunderstanding the processes of the laws of forces. In the early days of the telegraph, a conscientious and thoughtful lady of Milesian parentage, doing household service in my father's family, once said to me: "Misther John, I don't rightly understand how thim lethers they send by telegraph gets past the poles the wires is on!" To *her* it was as incomprehensible as a "miracle."

And now, as to the application of these thoughts on the majesty of law to the subject of sanitation. "It is a very large and inviting field; but brevity must be studied; and for the sake of brevity and for the sake of appealing to an expert in such matter, let me quote from a book which every one ought to have and read—"Notes on Nursing" by that angel of mercy, Florence Nightingale; and simply with reference to the health of houses.

After enumerating five *essentials* to such health, viz: Pure air, pure water, efficient drainage, cleanliness, and light; and after showing just how and why they are essential, Miss Nightingale says (p. 29, sq.):

"And now, you think these things trifles, or at least exaggerated. But what you 'think' or what I 'think' matters little. Let us see what God thinks of them. God always justifies his ways, while we are thinking, he has been teaching. I have known cases of hospital pyæmia quite as severe in handsome private houses, as in any of the worst hospitals, from the same cause, viz., foul air. Yet nobody

learned the lesson, nobody learned *anything* at all from it. They went on *thinking*,—thinking that the sufferer had scratched his thumb, or that it was singular that ‘all the servants’ had ‘whitlows,’ or that something was much about this year; there is always sickness in our house.’ This is a favorite mode of thought—leading not to inquire what is the uniform cause of these ‘whitlows,’ but to stifle all inquiry. In what sense is ‘sickness’ being ‘always there,’ a justification of its being ‘there’ at all?

“I will tell you what was the cause of this hospital pyæmia being in that large private house. It was that the sewer air from an ill-placed sink was carefully conducted into all the rooms by sedulously opening all the doors, and closing all the passage windows. It was that the slops were emptied in the foot-pans; it was that the utensils were never properly rinsed; it was that the chamber crockery was rinsed with dirty water; it was that the beds were never properly shaken, aired, picked to pieces, or changed. It was that the carpets and curtains were always musty; it was that the furniture was always dusty; it was that the papered walls were always saturated with dirt; it was the floors were never cleaned; it was that the uninhabited rooms were never sunned, or cleaned, or aired; it was that the cupboards were always reservoirs of foul air; it was that the windows were always tight shut up at night; it was that no window was ever systematically opened even in the day, or that the right window was not opened. A person gasping for air might open a window for himself. But the servants were not taught to open the windows, but to shut the doors; or they opened the windows upon a dark well between high walls, not upon the area, court; or they opened the room doors into the unaired halls and passages by way of airing the rooms.” Miss Nightingale goes on to say, “now all this is not fancy, but fact. In that handsome house I have known in one summer three cases of hospital pyæmia, one of phlebitis, two of consumptive cough;—all the *immediate* product of foul air. When, in temperate climates, a house is more unhealthy in summer than in winter, it is a certain sign of something wrong. Yet nobody learns the lesson. Yes, God always justifies his ways. He is teaching while you are not learning. This poor body loses his finger, that one loses his life. And all from the most easily preventible causes.”

This is the testimony of an expert. Even those who are not sanitary experts—I mean parish clergymen—have by their experience in pastoral visiting been often led to wish that the attending physician would use his authority not only in administering drugs, but even more in insisting upon cleanliness and proper ventilation. Such a use of his authority would prevent much sickness, would save many lives. Is it too late for the College of Physicians to take this matter in hand?

But the majesty of law asserts itself elsewhere than in the sanitary

condition of private houses. Why is it that children—sometimes teachers—sicken and die from attendance at our public schools? It is positively shocking that such a record as the following should be possible in a city one of whose boasts is its system of public education. The record is taken from the daily papers, and is in a measure official. Names are here suppressed, and localities designated by letters of the alphabet. One statement was to this effect:

"A fever-stricken little boy is tossing upon his bed at No. ——— street; he is ten years old; he may get well, and he may not. Two weeks ago, with many other little mortals in his district, he pondered over his primer in the old A school-house. One afternoon he lost his cheerfulness; his cheeks were flushed, he had a headache, and he has since been in bed. Dr. ——— says it is typhoid fever, and it is said it was brought on by the deadly gases from the outhouses of the school, which are sadly in want of attention, that every child is liable to get sick. \* \* The cellar of the school, a resident in the vicinity says, is often covered with stagnant water."

Now let me call your attention to the following astounding statement, appended to the above account: "A health officer (name here suppressed) says, *if a complaint is filed with him* he will send an inspector to the premises!" As if the *facts* of the case were not complaint enough! While the school directors and the health officers have been neglecting their duties—probably not understanding the first principles of them—the majesty of law has been asserting itself in consequent sickness and perhaps death. Nor is this an isolated case. From another prominent paper I take the following:

"A medical inspector of the Board of Health has prepared a report giving the result of his inspection of a number of the school houses of this city. For brevity's sake I will summarize:

School house B.—Location so bad and atmosphere of building so defective, that it may be unwise to expend any money in efforts to improve its sanitary condition! And yet the *laws* of health and disease work on remorselessly among the children sent to that school!

School house C.—Old; becoming more dilapidated every year.

School house D.—Badly arranged and defectively constructed. Not susceptible of much improvement.

School house E.—*Remains without change as previously reported.* The extremes of light and darkness are exemplified here.

School house F.—Outhouses still too close to the building.

School house G.—No *improvement* noted in condition. Cellar still damp—even quite *wet from an obstructed drain.*

School house H.—No change has been noted; yard still filthy and offensive.

I humbly submit that the above exhibit is simply appalling in its evidence of the incapacity, ignorance and criminality of *some* at least of those who have charge of the public school system of Philadelphia.

But until the national tariff ceases to be an issue in the choice of school directors ; until that official position is sought and filled according to some more rational plan than being able to carry a precinct for some political "boss," a long-suffering but lethargic public—which has *some* rights in the matter of public education—must be content to ponder sorrowfully upon the majesty of God's law, which will not swerve from its inexorable processes even to please politicians. The chief *penalty* of the breach of law falls, alas, on *innocent* victims. Those who are taxed to produce this result should take some swift and stern measures with those who are responsible for it.

Much might be said in this connection about the impure and otherwise defective water supply of this great city ; about the ill-paved and often filthy streets ; about the absolutely defective sewerage system, did time permit. The majesty of law in sanitation *will* in time assert itself in spite of demagogue, "boss," and politician ; for, in the words of one of England's greatest divines : "Of law there can be no less acknowledged than that her seat is in the bosom of God, her voice the harmony of the world ; all things in heaven and earth do her homage, the very least as feeling her care, and the greatest as not exempted from her power ; both angels and men, and creatures of what condition soever, though each in different sort and manner, yet all with uniform consent admiring her as the mother of their peace and joy."—(*Hooker, Eccl. Pol.*, I., § 16.)

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#### XXIX. Filtration of Drinking Water—A Vital Necessity.

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BY CHARLES F. WINGATE, *Sanitary Engineer.*

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The importance of thorough filtration of drinking water is apparent to every thoughtful observer and can hardly be over-estimated. The sources of both public and private supply are so liable to contamination by dangerous impurities that no dependence can be placed upon their purity. Every little while it is discovered that the water supply of some place, previously supposed to be pure and perfectly wholesome, is contaminated by sewage or other filth. Naturally, the people who make these discoveries are amazed and alarmed, yet few persons have any conception of the extent to which pollution in water exists. It may be said to be the rule rather than the exception in all thickly populated and rural sections, and even in towns which have a public water supply, a vast amount of disease is traceable to such sources. In this country the majority of typhoid epidemics have been caused by polluted water. In Massachusetts alone, from specific contamination of drinking water, there occurred from 1840 to 1880, 393,000 cases of typhoid fever and 40,000 deaths. The great cholera outbreaks of

history have been accounted for in the same way. In short, a pure water supply as stated by Hypocrate is one of the three essentials to health, second only to purity of air.

The growing consumption of mineral waters has been stimulated by the increasing pollution of the public water supply, but unfortunately these sparkling fluids are often manufactured from water that itself is sadly polluted. Intemperance has undoubtedly been fostered by distrust of drinking water, and the most ardent total abstainer might be tempted to decline the iced decanter of "Schuylkill straight" in favor of some less poisonous decoction. Milk, beer, Apolinaris, all alike are tainted with impurity. The trail of the serpent is over them all.

Physicians of experience ascribe the marked increased in renal diseases in all sections of the country, among persons of all conditions, and of both sexes, as in a great measure due to sediment contained in drinking water, which the kidneys, the filters of the body, cannot eliminate from the system. Hence the clogging and consequent degeneration of those organs.

Owing to the hardness of the water and the mineral matters held in solution in so many springs, preference must be given to the waters of rivers and ponds which are better adapted for domestic use.

Consumers will naturally choose the most abundant and convenient source of supply, and therefore rivers and lakes will have the preference. Nevertheless the very magnitude of these sources of supply will tempt the ignorant and unwise to pour into them their household and individual wastes.

Dr. Charles Smart, in his paper on Water Supply of Cities, read before this convention, very justly declared that chemical tests alone are not conclusive evidence of the wholesomeness of a public water supply, in the face of an excessive mortality from diseases like typhoid fever, which are largely traceable to a polluted drinking water.

Furthermore, to quote the last annual report of the New York State Board of Health :

"It is a thing of common experience that water highly contaminated even with excremental matter may be drunk for a long time with apparent impunity by many people; but that at some unexpected moment, either from an as yet unknown change in the fermentation process or as is often probable, from the introduction of an almost inappreciable quantity of specific infective excreta, an outbreak of typhoid may devastate the community thus supplied."

The distinguished sanitarian, Simon, tells us that the effect of impure water is not always sudden, violent or general. On the contrary, its results are more usually so gradual as to often elude ordinary observation, but is not the less real on that account.

The extent and manner in which a public supply is liable under the the best conditions to be contaminated is aptly illustrated in the case of New York city. In purity, color and wholesomeness, the Croton

ranks second to no other potable water; yet a recent official report by the New York health authorities states that the Croton water shed embraces 239 square miles, and has a population of 20,000 with 1,879 dwellings, besides barns, pig pens, cesspools, cemeteries, slaughter houses and other sources of contamination and with no drainage excepting on the surface.

Yet in comparison to the water supply of many other American cities, the Croton is purity itself. Philadelphia draws its chief supply from the Schuylkill, a sewer and factory polluted stream. The 300,000 inhabitants of Newark and Jersey City pump into their reservoirs the waters of the Passaic river filled by the sewage of Paterson. Prof. Leeds says: "The river immediately below the town is black with dye-stuffs, the fish carried over the great falls are immediately poisoned, and analysis reveals that the water has acquired an enormous percentage of nitrogeaneous matter." Boston's supply is threatened, while Chicago, St. Louis, Cincinnati, Providence, Baltimore and a score of other cities are drinking water contaminated in the same way by sewage, factory or surface drainage, or by cesspool seepage into wells. The large majority of rural and village residents depend upon shallow wells dug in porous soil close to leaching cesspools and the cool draught from the "Old Oaken Bucket" too often contains concentrated poison.

The introduction of a public water works almost invariably leads to a diminished death-rate from zymotic disease, and could the purity of the supply be maintained by filtration the health of the community would be permanently benefited.

But as has been shown, the sources of pollution are manifold and increasing. With the increase of population the growth of manufactories, and the crowding of houses in the vicinity of storage reservoirs and their feeders, filtration becomes indispensable.

Again it is becoming more and more recognized that streams receiving sewage are not purified, no matter how ample their volume or how rapid their flow. Chemical tests alone cannot be taken as a proof of purification. The poison of typhoid has been conveyed twenty-five miles by a river and communicated to forty hospital patients who drank its waters. To quote from a high authority (Mass. State Board of Health, 1876): "If sewage contains the germs of disease whatever they may be, no agency at present known, except a sufficiently high temperature will effectually destroy them."

Hence it is desirable as Parry, one of the best English authorities, says, that filtration should be performed wholesale by the public authorities, rather than to leave it to individuals. Thus rich and poor alike are benefited, and it will not be necessary to trust to cheap and worthless appliances left in charge of careless domestics.

Many towns and water companies filter their water by passing it through beds of broken stone, gravel, sand, charcoal or other material.

These are often very extensive and costly, notably those of the London Water Company and at Berlin. The filter beds at Poughkeepsie cost over \$75,000 for the plant alone.

The action of a filter is either mechanical or chemical. Solid particles which are too large to pass the pores of the filter are arrested; other particles adhere to the surface of the filtering material, even after they have been wholly dissolved. Furthermore the air contained in the pores of the filtering substance oxidizes the dissolved organic matter and thus destroys it.

It follows that the more extensive the area of filtering material the greater the power of holding impurities by adhesion; while the more frequently and thoroughly it can be cleansed and aerated the more efficient its action.

More or less elaborate arrangements are provided for cleansing public filter beds. But as a rule this is irregularly and carelessly done, and hence, just in proportion to the efficiency of the filtering material does it become clogged. "Inadequate area and infrequent cleansing," says Prof. Nichols, "are the common faults of many so-called filters. The most that can be said of the majority of such filters is that they act with greater or less efficiency as strainers, but they do not remove the finer and more dangerous impurities."

Furthermore, as the filter beds are not covered, the exposure of the shallow water to the hot sun in summer, assists the development of vegetable life which causes a disagreeable odor and taste in the water. Doubtless organic putrefaction may be assisted in like manner. In cold weather the filter beds are frozen and cannot be used.

Prof. Ripley Nichols states that sand is the best material yet used practically on a large scale for artificial filtration. Visible suspended particles and an appreciable proportion of organic matter actually in solution may be thus removed. He lays special stress upon the need of abundant area, frequent cleansing and renewal of the filtering material, constant supervision, protection from the sun and prompt distribution of the filtered water to consumers.

Where a water supply is taken from deep wells, basins or collecting galleries which are fed by "ground water," as at Prospect Park, Brooklyn, the supply will go through a process of natural filtration. But the water from such sources is not always potable.

Dr. Smart in his paper of last evening testified to the satisfactory results achieved by natural filtration, in the percolation of the rainfall through sand, gravel and other porous soils. If a public water supply could be subjected to the same process of filtration by passing it through a sufficient mass of material equally good results would follow. In the case of the soil, there are usually intervals between rainfall during which matters caught in its pores are oxidized, otherwise the pores would become clogged and prove a source of evil. This



further illustrates the need of frequent and thorough cleansing of all filters.

With regard to the domestic filters, it is essential that the material employed should not act injuriously upon the water. The mechanism should be simple and the appliances inexpensive; the filter should be easily cleansed or the material renewed; and lastly not only all suspended particles, but also so far as possible all dissolved organic matter should be removed.

The Japanese use a porous sandstone filter hollowed in the shape of an egg, through which the water percolates into a receptacle underneath; the Egyptians resort to a similar device; the Spaniards use a porous earthen pot. But these devices cannot be thoroughly cleansed; some impurities will remain in the pores of the stone. Spongy iron and carfural are open to the same objection. The various forms of filters that are screwed to the faucet have not enough filtering material in them to be of much utility, and they very soon become foul and offensive. Buck says: "There is no material known which can be introduced into the small space of a tap-filter and accomplish any real purification of the water which passes through at the ordinary rate of flow." Complicated closed filters which cannot be cleansed condemn themselves. Parkes, in his "Manual of Practical Hygiene," says: "Filters where the material is cemented up and cannot be removed ought to be abandoned altogether." Filters in which the water comes in contact with metallic surfaces, either iron, lead, tinned iron or zinc are objectionable from their appreciable influence upon the water retained in them for any considerable time. Pure block tin is the least objectionable of any of the metals. The aim of most filters is to remove impurities from the water as rapidly as it escapes from the faucet. Effective filtration cannot be accomplished when the water does not remain long enough in contact with the filtering material to become purified. Slow filtration or purification is therefore best. Of all the filtering materials mentioned, sand and charcoal are the two that accomplish the best results.

The radical objection to most household filters is that, to use Prof. Frankland's words, "The polluting matter removed from the water is stored up in the pores of the filter and in time develops vast numbers of animalcules, which pass out of the filter with the water, rendering the water more impure than it was before filtration. It is, therefore, necessary to remove and purify the material."

These statements demonstrate the vital necessity of filtration. The question next arises, how far does or can filtration purify? To what extent can it be depended upon to guard the public against the dangers from the pollution of a water supply, and is it applicable for use upon a large scale?

After studying the results obtained both abroad and in this country this inquiry can be answered emphatically in the affirmative. But to

be practicable the undertaking must be carried on upon a large scale. By this I mean that the water to be purified must be passed through a body of filtration material of sufficient volume to insure the complete removal of all matters held in suspension, however minute. On this account the numerous patented appliances for domestic filtration, cannot be recommended. They are too small to perform their duty. It is like setting a child to do a man's work.

It is capable of demonstration that the water supply of the largest cities no matter how great its volume, can be effectually and economically filtered. It is simply a question of ways and means. There are to-day in use in many industrial establishments in this country and elsewhere, including paper mills, breweries and others which consume enormous quantities of water (one manufactory alone using 48,000 gallons per hour), filtering appliances, which have borne the test of years of trial, and which are delivering large volumes of filtered water of a purity, transparency and general quality which would astonish the average water drinker in our principal cities and towns.

Private intelligence and enterprise, have here as in other cases achieved results in advance of the public authorities. Necessity has proved the mother of invention.

With such practical demonstrations of the possibility of purification by filtration, a demand should be made upon our water boards to investigate these appliances and to ascertain the possibilities of applying like methods in cities and town and thus improving public health.

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### XXX. Narcotics and the Appetites which they Produce.

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By R. LOWRY SIBBET, M. D., *Fellow of the American Academy of Medicine, of Carlisle, Pennsylvania.*

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In commerce, in chemistry and in medicine there is a large class of products called poisons. Some are the products of nature; others are the products of art.

In this class of products there is a division or sub-class, which, in our works on *materia medica*, are recognized as *narcotics*.

In this sub-class there is a small group, very remarkable in this respect, that they produce in persons who persistently use them, what are called *appetites*. To this small group, and to the appetites which they produce, we ask your attention for a few moments. The most important of them are opium, haschish, tobacco and alcohol. There are a few other drugs which are supposed to produce cravings in those who tamper with them, but they are not generally known to the public.

We are not aware that these drugs have ever been classified in this

manner, or considered with respect to the appetites which they produce, though they have often been described in medical and other scientific works. And as their use, or rather their abuse, has very much to do with the health of millions of our fellows, we think that a paper on this subject may be appropriately read in your presence.

We can, of course, only refer very briefly to the products themselves. The first-named, opium, is the inspissated juice of the poppy plant. It is a product of the east, and cannot be cultivated with profit either in Europe or in America, a circumstance which may prevent its general use except as a medicine.

Of opium very little was known until the commencement of the christian era, when it became an article of trade. It deservedly stands first as a medicine, as it certainly stands first as a narcotic. Its effects upon man are well-known. In moderate quantities it diminishes sensibility, and in most cases produces sleep. It is one of the best pain destroyers known to mankind. In large quantities it produces profound stupor and death.

In the east opium is chewed and smoked in immense quantities, and the habit is well nigh incurable. Its victim is soon enslaved. He loses his natural appearance, his desire for food, his flesh, and his ambition. His sufferings, which may continue many years, are said to exceed those of the drunkard. He becomes delirious. The most disgusting, and the most horrible scenes are perpetually before him, depriving him of rest by day and sleep at night.

Haschish or Indian hemp, is also a product of the east. It cannot be cultivated in either Europe or in America, a circumstance which may prevent it also from coming into general use. Herodotus refers to the use of the seeds as a medicine. It is chiefly smoked, though tinctures and beverages are made of it. When in Morocco a few years ago, I found the natives very much addicted to smoking this drug.

The effects of haschish upon man are even more remarkable than those produced by alcohol. They vary as the constitution of the individual varies. Some persons go into delightful reveries; others take to laughing, singing and dancing; whilst others become stupid, morose, treacherous and quarrelsome. "The habitual use of the drug," says Prof. Stille in his *Therapeutics*, "entails consequences, no less mischievous than those produced by alcohol and opium; the face becomes bloated, the eyes injected, the limbs weak and tremulous, the mind sinks into a state of imbecility, and death by marasmus is the ultimate penalty for the overstrained pleasures it imparts.

We need not detain you with a description of tobacco. It is an American product, though it may be cultivated in all countries. On this account it is likely to come into universal use. It has an immense trade.

Tobacco is both a sedative and a narcotic. Introduced into the stomach it produces vomiting, prostration, insensibility and death.

When chewed or smoked in moderation its effects are generally agreeable, giving rise to a feeling of satisfaction, contentment and resignation. In the long run, however, its victim pays a heavy penalty. Like all of this small group of narcotics, tobacco is a deceiver. Very many persons, after using the drug several years, find it impossible to perform the ordinary work of the day without it. This is especially true of those who commence chewing or smoking in youth; and for this reason, and for others as well, its sale should be restricted. Its effects upon the health of the individual may not be distinctly noticeable until ten or fifteen years have passed around, when symptoms of dyspepsia begin to appear, accompanied, it may be, by irregular action of the heart, angina pectoris, vertigo, paralysis of the lungs, indistinct and double vision, and general nervousness. Two very alarming symptoms are occasionally produced by the drug, namely, a complete loss of consciousness, resembling apoplexy or drunkenness, the individual falling to the ground, and a fear of sudden death, when there are no indications of it. In a very large number of persons the habit interferes with a successful life, not only by imposing a heavy tax, but by producing a noticeable degree of irresolution, despondency and laziness. For tobacco sickness, its best antidote is alcohol, and hence very many chewers take also to drinking.

This brings us to the most noted of these products—alcohol. Unlike opium, haschish and tobacco, it is a product of art. It is not found in the juice of the grape, or in fruits, or in cereals, as many persons suppose. It is a product of fermentation, and without fermentation it has no existence. It comes to us in disguise and thousands of our fellows are captivated by it and slain. It is in wine, beer, ale, porter, whisky and rum as well as in all other fluids that have undergone vinous fermentation, and from these it may be distilled.

Pure alcohol is known only to the chemist. It is a clear fluid, like water, but much lighter, having a rather pleasant odor and an agreeable taste. When ignited it burns with an intense heat, leaving no residuum. It destroys every form of animal life, even when diluted with half water. It is a subtle and dangerous product and it may be manufactured in all countries.

Alcohol is a stimulant, as well as a narcotic. Well diluted as it is in wine, beer, ale and whisky, it produces a degree of intoxication well known to us all. Of late its pathological effects upon man have been carefully studied; and they are now much better understood than formerly. Educated men no longer entrench themselves in the ignorance of past centuries and defend the daily use of alcoholic beverages. Chemistry and medicine have thrown light upon the subject; and the injurious effects of such beverages are no longer denied. On this occasion we cannot delay to speak of the poverty, the wretchedness, the crime, the disease, the suffering, and the premature death of thousands and even millions of our fellows—of the time and talent

wasted, the estates squandered, the expenses of courts, prisons and almshouses, and of the demoralization of the people—all of which may be referred to the appetite for this subtle and dangerous product. Who of us has not seen, in his own relationship, the drinker going through all the disgrace and shame of the drunkard's life, falling and rising again, signing a pledge to abstain from all intoxicating drinks and then breaking it, promising his neighbors and his wife, never to drink any more, and then, the next week, or the next month, selling his coat, or his children's shoes, for alcohol? Do you say he is insane? Ah, no! he has not reached that point, though he is approaching it. He has an appetite or thirst and he wishes to allay it. His condition, mark you, is not essentially different from that which is produced by opium, haschish or tobacco, though it is indeed deplorable. Considering the large number of our fellow citizens who are on the drunkard's path—millions no doubt—and the enormous quantities of these drinks sold in our country, under the sanction of law, all of which produce in the drinker this appetite, *this insatiable thirst*, our subject assumes an importance which places it far in advance of all others that now occupy the attention of the American people.

Having thus directed your attention to this small group of remarkable products we come to consider with equal brevity the appetites which they produce. And if we should seem to differ from others, in relation to them, we would say, that it is for this reason that we have introduced the subject, believing that it should be carefully studied. As synonyms of the noun appetite we may have occasion to use the words craving thirst, desire and other equivalent expressions.

That these appetites have an existence, there can be no doubt. We have the testimony of many honest but unhappy people on this point. Besides we have the evidence of our senses, there being many persons in every community who are obviously under the power of one or more of them. If we have not seen the opium-eater or the haschish-smoker, we have seen the tobacco-chewer and the alcohol-drinker.

In the further consideration of our subject, we ask your attention to the following propositions:

1. That these appetites or cravings are not the result of an *original* instinct in the race.
2. That they are not dependent upon an *acquired* instinct.
3. That they are the result of impressions made upon the organism of the individual by his own agency.

Let us notice these propositions in the order in which they are given. And first, if these appetites are the result of an original instinct, then has the Creator implanted it in our race. He has given to man an inclination to injure himself, to destroy his happiness and to shorten his life. Moreover the instinct if it exists at all is hereditary, as all instincts are hereditary. It is transmitted through the generative function and is continuous with the existence of the race. In har-

mony with this theory the instinct may be said to show itself in several ways; in some, in the use of opium; in others, in the use of hashish; in others in the use of tobacco; in others in the use of alcohol; and in all persons, wherever the products can be obtained. In other words, that there is a necessity in our constitution, and in our circumstances, for the use of some such narcotic products. This would of course place the responsibility upon the Creator. It is however mere theory; and besides, we do not find that God has proceeded on this plan in other departments of his creation. He has not given to any of his irrational creatures an instinct which leads them to self-destruction. Everywhere we see that self-preservation is the law of their being; and it is not probable, that he would give to man, his noblest work, an inclination to make use of poisonous products to his own injury.

Infants have an instinctive desire for milk and a little tepid water, but for no other fluid, good milk and pure water contain all the elements of nutrition needed at this early period.

The same instinctive desire is observed in all the mammalia. Immediately after birth they exhibit a desire for milk, and without it they die. In a few weeks or months, they incline to drink, in addition, a little water, but no other fluid. When their teeth have become firm, they begin to manifest a desire for other articles of food; but water is their only drink. Some select a purely vegetable diet; others incline to live upon flesh to the exclusion of all vegetable products; whilst others prefer a mixed diet, but in no case does an irrational animal select and use a hurtful and poisonous product.

If we turn to other departments of the animal kingdom we find that birds, fishes, reptiles and insects are all governed by the same law of self-preservation. They instinctively avoid the use of all products which they suspect to be hurtful to them.

But it is proper to notice another fact, which is recognized in science, that instincts are common to all the members of a class or species. What one does, all others of the same species are inclined to do. The food which one animal prefers, all others of the same class prefer. If an ox prefers grass, we infer that cattle everywhere prefer grass. If a lion prefers meat, we conclude that lions everywhere prefer meat, and that they have always been flesh-eating animals. This is instinct uniform and unchangeable in all orders of animated beings.

Man is not an exception to this rule. He was made to be a cosmopolitan—to exercise lordship over the earth. He has consequently an instinctive desire for a great variety of wholesome articles of food. He can even live, for a time, upon innutritious and injurious products, but it is very plain that he has no instinctive preference for them. In all latitudes his choice is a mixed diet. In the tropics he requires a larger amount of vegetable food; in the frigid zones a

larger amount of nitrogenous products. But in the tropics what one class or family prefers, all others prefer. If in the temperate zones, one family prefers a thoroughly mixed diet. What one Esquimaux Indian lives upon, all others live upon. This is also instinct uniform and unvarying.

But all members of the same family in Asia do not use opium. The people of Morocco do not all smoke haschish. Nor do all Europeans and Americans use tobacco and alcoholic drinks though they have many opportunities to do so. Where any of these drugs can be obtained all should have a desire for it. The children of opium-eaters, haschish-smokers, tobacco-chewers, and alcohol-drinkers should have these appetites if they are the result of an *original instinct*.

But there may be a much larger number of persons who maintain, that these appetites, which enslave so large a proportion of our race, are the result of an *acquired instinct*. This brings us to consider our second proposition which is much more in harmony with the modern theory of the gradual development of our race or evolution. But we think it would be very difficult to show how this theory of an acquired instinct for narcotic drugs, could lead to an improved condition of our race. It would surely be a development or evolution in a downward direction. Definitely stated the theory is this, that individuals in the past centuries or ages, tampering with such drugs as opium, haschish, tobacco and alcoholic drinks, acquired an instinct for these drugs which they have transmitted to these descendants through the generative function. It is precisely this theory that we see discussed in the magazine literature of the day, and which we hear repeated in almost every temperance lecture. We may substitute the word appetite for the word instinct with the full consent of these enthusiastic reformers. The son, they say, inherited his drinking appetite from his father or his mother, his grandfather or his grandmother. The instinct they say is in the family; it has come down, it may be from the third, fourth, fifth or tenth generation and it will be transmitted to others. Let us also look at this theory for a moment.

The theory of an original instinct we have disposed of; it places the responsibility upon the Creator; this one places it upon our dead ancestors who cannot speak for themselves. Whether we attempt to discuss the one or the other of these theories we cannot but suspect that they are both delusions. Their inventors evidently regarded themselves without sin; the one class placing the responsibility upon the Creator, the other upon their parents and their grandparents. Brought before a court of justice they would equally say "not guilty."

As to the origin of this theory of an *acquired instinct* we may take for illustration the case of our first parents who are represented as being unwilling to bear the responsibility of their sin. Adam being accused, said: "The woman whom thou gavest to be with me, she gave me of the tree, and I did eat"; And Eve being likewise accused,

said: "The serpent beguiled me, and I did eat" Adam blamed his wife, and Eve blamed the devil. This has been human nature ever since. We are unwilling to make a public confession.

Take another illustration, that of the drinker who may be supposed to soliloquize with himself in the following manner:

"It is true I am a drinker, I have spent my fortune, I have ruined myself, and disgraced my family. My father drank whisky and beer, and my grandfather too. I have inherited the appetite, and I cannot help it. My wife and my friends may say what they please I am not to blame.

This is the reasoning of many drinkers to-day, and strange to say, it is the reasoning of many so-called scientific men. It is the doctrine of heredity applied to the drinker, and in it he finds his consolation. It soothes his conscience and allays his fears. It is the doctrine of the magazines, the newspapers and temperance lecturers generally. On the same principle, the present opium-eaters, hashish-smokers and tobacco-chewers have inherited their appetites, and will transmit them to their children. Considering the fact that one-half of mankind are using narcotic drugs, we have indeed a gloomy view of the future of our race. Schoppenhauer has not presented a pessimism, for the future of mankind worse than this.

But let us look at the facts in the case, as far as it is possible. The statistics which are supposed to bear upon the subject, are very meager and very unreliable. Those collected from inebriate asylums, hospitals for the insane, and institutions for feeble-minded children are necessarily delusive. The reason is, that the facts cannot be obtained in these ways. Perhaps those who have lived long enough in a single community to have associated with three generations would have the best opportunities to collect reliable statistics. The history of ten, twenty or forty families for three or four generations carefully written out would be more reliable than any other kind of information that could be collected.

On the supposition that alcoholic intemperance is hereditary, there should be as many intemperate daughters in a family as sons; but this, we know is not true. Again the children of drinkers should seldom if ever remain sober, but this is not true. We have seen all the children remain sober where the father was a drinker. Again the children of sober parents and grandparents should always remain sober, but this also is not true. We have all seen the children of sober parents and grandparents become drinkers. The strongest case, that we can possibly conceive of, is that of the mother using alcoholic drinks during the period of gestation; and yet we have no good reason to believe that such children inherit from their mother an appetite for strong drinks. Indeed we know that they sometimes grow up and remain sober and industrious men and women in spite of their inauspicious surroundings, the truth is that there is no evidence of a



physiological, pathological or psychological kind, that can be taken as proof, that alcohol produces changes in individuals which appear in their children, much less that of an instinct or an appetite. Nor is there any evidence that opium, haschish, tobacco or medicine, much as they may interfere with the development of a healthy organism *in utero*, produce appetites or cravings in children begotten and reared in such circumstances.

We conclude therefore that this acquired and transmitted instinct exists only in theory—in the imagination of those who are in search of an excuse which shifts the responsibility of wrong doing upon others. God has not left his creatures without the environment of law. He does not allow the poisonous products which they must necessarily eat and drink, in smaller or in larger quantities, to change their instincts or to produce new ones. He may and does allow many members of a species to die, but he protects the species. He does not allow the ignorance of one or of many to destroy his work. If the eating of a poisonous product could change the instincts and appetites of the next generation the greatest confusion would follow. The world would soon be filled with monstrosities. There are *dead lines* which cannot be crossed, and it is these which protect our race, and indeed every species of animals. We are hopeful for the future.

A few words on our last proposition; namely, that these appetites are the result of impressions made upon the organism of the individual by his own agency. This view of the subject places the responsibility upon the present generation, but chiefly upon the individual himself, who, unwitting, tampers with these products.

In making use of these narcotics for the first time, it may be said, that we do so, in consequence of some supposed virtue in them, as a medicine; or we may use them out of mere curiosity. The Asiatic or African having a toothache or a pain in any part of his body may use a small quantity of opium which may be given to him by a friend or his medical attendant; or suffering from a sense of fatigue after a day's labor or of worry, he may smoke a small quantity of haschish. In either case he is relieved; and in similar circumstances repeats the same act. Curiosity in boys and girls may induce them to tamper with these products when there is neither pain nor fatigue, and the effect upon the organism is the same.

We all know how the habit of chewing tobacco is formed in *our country*. It may be for the purpose of arresting a tooth-ache, but this is a rare case. The big boy thinks it manly to display his fine cut tobacco, imitating the young man of fashion; and the little boy is curious to know how it tastes. A large number of boys acquire the habit clandestinely, before they have reached their tenth year.

The smoking habit is acquired very much in the same way. The son, on his father's knee, looks with wonder at the smoke issuing from his father's pipe or cigarette; and to his innocent inquiries the

fathers say—"Little boys must not smoke," which of course excites still more the curiosity of the child, and very naturally his reply is—"When I get to be a big man, I will smoke." At present there are millions of boys in our country who are training themselves to the use of tobacco.

The alcohol habit in our country comes later in life, for the reason that in most of our States there are laws which prohibit the sale of intoxicating drinks to minors. These drinks have the advantage, or rather the disadvantage, of being pleasant to the taste, very prompt in their action, producing a degree of mental excitement which we call intoxication. The custom of treating friends, so common in our country, is at the bottom of the drink-habit. It implies a social glass, once a week, or it may be, once or twice a day. These are the first steps in the drinker's unhappy career.

Connected with these habits which may be called narcotic, there are appetites which may also be called narcotic. The latter, however, does not always succeed the former. For example the habit of smoking a segar, once a week or once a day, may not beget an appetite. The habit of taking a glass of wine occasionally, or a glass of beer may not produce a thirst for it, but the habit, in either case, to say the least, is a dangerous one.

How much of tampering with any one of these narcotics is necessary to produce an appetite, we cannot tell. In some the appetite lingers for years; in others it is kindled into a flame in a few weeks or even days. What is remarkable is this, that very many persons taken to the use of two of these products and consequently acquire *two appetites*. They are in the daily use of tobacco and alcoholic drinks, and they apparently cannot live without them. In these cases the victim is bound hand and foot. His appetites drive him from pillar to post. But what is still more remarkable we have persons in every community who have acquired a *third appetite*. To the tobacco and alcohol they have added opium. In such cases, the victim is bound by a triple cord, and he becomes of all men the most miserable. His demons torment him day and night.

Much may be said about the cause of these appetites, but we cannot doubt that they are the result of impressions made directly upon the organism of the drinker. By the use of a poisonous drug of any kind, impressions are made, and if the same act is repeated again and again, the impressions are renewed and deepened. Physical changes are produced. These are very visible in the case of the alcohol drinker. In France the wine drinker has a blue nose; in Germany the beer drinker has a bloated and fixed expression of the face; in England and in America the whisky drinker has a florid complexion and blood shot eyes, and in all, who drink to great excess, there is the tender and careful walk—a sure sign of chronic alcoholism. The physician is best acquainted with the changes produced in the organ-

ism of the habitual drinker as shown by autopsies frequently made. In the stomach, the lungs, the liver, the kidney and in the brain these changes are clearly seen and are now well understood.

Why these poisonous products produce appetites and other products do not, we cannot tell. But this is not strange; since we cannot tell why one drug is a purgative, another is an expectorant and another is a tonic. We know the facts and our duty is to act accordingly.

Finally. What course should we pursue as sanitarians, in relation to these products, so remarkable in their effects, so extravagantly used, so destructive to the health and happiness of mankind? If their sale cannot be suppressed should it not be restricted by legislative enactments? Should their use not be limited to useful and necessary purposes? If other poisonous drugs should be labelled, should not these be labelled? Dr. Benjamin W. Richardson, of London, speaking of the evils of intemperance in his Cantor lectures, says "there is no compensation and no human cure." This may be true of the drink-curse under monarchical forms of government, but in a republic like ours, we can have what the majority of the people wish. We have hope for our country.

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#### XXXI. Technics of Animal Vaccination.

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GENTLEMEN: Since the discovery of vaccine virus and proof that it gave immunity to small-pox, one great question has vexed the world of medical science.

It has asked how can we obtain an absolutely pure virus, the use of which will not be attended with the danger of inoculating the patient with some specific disease? This danger, while very great in the use of humanized lymph is very much lessened when bovine lymph is substituted.

This question of obtaining pure bovine lymph has reached its highest development in the countries of continental Europe, where the production of this material is under the supervision of the different governments, who have placed it in the hands of qualified veterinarians, thus obtaining the best guarantee possible for its purity.

Does this same qualification hold good in this country? I am sorry to say that it does not.

How many of the hundred so-called vaccine farms are under the guidance of men who are qualified by reason of their training and

education to distinguish the difference between bovine tuberculous and contagious pleuro-pneumonia ; or to recognize this latter disease from that of a sporadic character. I assert, gentlemen, that any of you who are willing to take the trouble, will find that a very small proportion of these farms are under scientific guidance of any kind, even the most questionable.

Vaccine, whether it be obtained from the equine or bovine race of animals, possesses the same characteristics and if inoculated into the human system confers immunity from small-pox, or a second vaccine inoculation. It has been considered that the characteristic properties of vaccine was inherent in the liquid.

This is a mistake. It has been demonstrated beyond the question of doubt that the active principle of vaccine is due to the presence of small special bodies, which by every one is now admitted to be infectious, parasitic, vegetable organisms. These microbes, considered as the specific agents of small-pox and vaccine, are small, perfectly spherical micrococci.

Chauveau has undeniably demonstrated that vaccine lymph deprived of these corpuscular elements lose all its physical characteristics.

While the microbe of vaccine does not differ in its visible characters from the small-pox microbe, I do not desire to be understood as saying that vaccine is small-pox attenuated by its passage through the body of the horse or cow. Kelhs mentions as a characteristic which is more or less common to the microbe of vaccine as to those of small-pox, the disposition to form groups of four, and has therefore given them the name *micrococcus quadrigeminus*.

For nearly one hundred years the desire to determine the question, whether the vaccine which we employ to protect ourselves from small-pox, came in the first place from the horse or cow, has given rise to the most animated discussion in the medical world.

Jenner in his own work, published in London in 1798, entitled "An inquiry into the cause and effects of variola vaccina," admits that vaccine was originally derived from the horse, recognizing that certain persons, employed to care for milch cattle, were not susceptible to the small-pox virus, with which he inoculated them, and that they owed this immunity to a disease which they had contracted from the udders of the animals which they were in the habit of milking, but at this point he has been obliged to admit that these cattle had taken the disease from horses with which they were directly or indirectly in contact.

This disease of the horse is spoken of by English writers of veterinary literature, as grease ; this misapplied cognomen, is likely to lead one astray and to attract our attention from the true constitutional disease termed by M. Bouley horse-pox, to that purely local one called, as I have said by English writers—grease.

Cow-pox may be produced in the cow by inoculating with horse-pox, with natural or artificial cow-pox, or by human vaccine. Upon this property depends the practice known as *animal vaccination*.

The vesicle of vaccination in the horse presents different characters from those which are found in the cow or in man. In this animal they present a conical appearance, instead of being umbilicated, as is found in the last two cases. The secretion of the vesicle is also different in the horse; that from the entire vesicle is effective, while in the cow and man, that from the center of the vesicle only, presents any activity. Let us put a few questions to ourselves and ask what this special contagion is.

Is this contagion the same for man as for the horse or cow, or are there different contagions for each of these.

The solution of these questions depend upon the similarity of the germs of small-pox and of vaccina.

They have for more than half a century been the subject of the most interesting discussions and to-day they may be said to be altogether unchanged and undecided.

It remains for modern scientists to elucidate the facts from these questions.

#### THE TECHNICS OF ANIMAL VACCINATION.

Up to the present time vaccination termed animal has been resorted to only in the bovine species. I prefer to use for this purpose small animals varying from six to eighteen months of age, although an advanced age is no more serious objection than what would naturally follow from an increase in size. These calves should weigh from two to five hundred pounds and be in good health.

It is seldom that I can obtain animals that are fit for immediate vaccination. As a rule they come to us in a very unthrifty condition. They have been wintered in the barn yard, often without even a shed for shelter, their food which at the best has been corn stalks, has left them in such condition that unless much care is exercised in the first ten or fourteen days, the change of food will be sufficient to bring on an attack of diarrhœa.

Notwithstanding the great care exercised in the change of food of these animals, it is by no means uncommon to see them suffer from slight attacks of this disease.

The first thing necessary after the animal has reached our hands, is to rid its hide of the lice and other vermin, which infest it. This is absolutely essential for obvious reasons. While the animal is running in the field or yard, it appears to suffer little or no inconvenience from these insects, which are benumbed with cold, but immediately they are put into a warm stable they will begin to itch, and consequently rub, bite and scratch themselves. Their temperature will go up to

103 or more, the hair will begin to fall, and in a short time they are sorry looking objects.

To carry out this plan two or three baths of sheep-dip is all that is needed. This, with a week or ten days careful feeding is all that is necessary to bring the animal into condition to be vaccinated.

Color is a question of importance in the selection of animals to be vaccinated, a red and white coat indicate a soft skin; one that is free from black pigmentation is an advantage in our observation of the different stages of the eruptive fever.

When the animal is in proper condition, she is brought into the operating room, where she undergoes a most rigid examination. There must not be any diarrhoea or digestive derangement of any kind, neither must there be any kind of bruise, wound or abrasion, broken horns or hoofs of recent date, as complications of this kind will prevent the take of the vaccination.

Animals upon which are found neoplasms of any kind are also rejected. Elevation of temperature, increased respiration and pulse, with other kinds of acute disease are carefully looked for and as carefully rejected when found. An exhaustive and thorough examination is made to determine the presence of lung lesions and the slightest indication of their presence is sufficient to prohibit the utilization of that animal for the propagation of vaccine lymph.

The animals which are to be used for vaccinating are confined in a large roomy stable, seventy feet long, about forty wide, about ten feet high in the walls, and twenty to the centre of the roof. A number of very large windows furnish light to this building; ventilation and drainage is as perfect as it can be made.

In the winter, the room is kept at the proper temperature by means of a steam-heating apparatus, the walls of this stable are finished in hard yellow pine and oil, while the roof which forms the ceiling is whitewashed.

By this arrangement you will perceive that we have a cattle stable which is almost perfect in its details.

Feeding is carried out in as precise and accurate a manner as are all the other details.

The food consists of bran, ground corn, oats and cut hay, supplied in liberal quantities.

Straw for bedding purposes is used quite freely, a bed twelve to fourteen inches thick is kept under the animals all the time. These animals are carefully groomed twice every day and as much pains is taken with their coats, as if they were race horses. When it is desired to vaccinate an animal, she is led to the operating room and there placed upon an upholstered table upon their backs, their legs upward, each of which after being protected by a pad of thick felt, is securely fastened to a post in the frame of the table. While in this position the hair is removed from the inside of the thighs and the belly as far

forward as the umbilicus. This hair is first removed with the scissors and soaped and shaved, perfectly clean. Upon this shaved surface are afterwards placed from fifty to seventy, or even one hundred points of insertion, varying in size from a quarter to a half dollar. These points are made by first scraping off the epidermis and afterwards making a number of scarifications in different directions.

Then comes the important step of the operation, placing on the vaccine. This should be done with the greatest care, as upon this depends your success or failure. It is truly remarkable what an astonishing number of failures can be obtained with the best virus, when this operation is not properly carried out. The animal after being vaccinated is placed in a warm stable and where there will be no danger of drafts or cold to which they are now quite susceptible, the stall in which they are placed must be wide enough to be comfortable, but sufficiently narrow to prevent the animal from turning, which it will invariably try to do, in order to lick the scarifications, which burn and sting very much.

Abundance of clean straw must be supplied and the fæces from the animals removed as fast as they fall. This insures cleanliness, which is one of the great essentials of success. We must not forget that the full product of vaccination should be obtained on the sixth day at the farthest, and in Europe where all the animals are slaughtered for food, they invariably go to the butcher on the seventh day or before the possible development of suppurative fever.

It is a fact that the animals do not suffer through vaccination, never mind how numerous the insertions may be.

It may suffer from the effects of a journey, or from the ill treatment it has received from the change of stable or companions, but from vaccination never. Nor is vaccination ever a cause for depreciation in its value.

It is an unanswered question, why at, or during the vaccinal period calves are likely to be attacked with diarrhoea and tympanites. Diarrhoea will often yield to light and proper diet and some emolient drinks in a few hours; if it persists it may arrest, or at least delay vesication. Tympanites, which is a frequent complication, is nevertheless a disagreeable one. If this complication should arise at the beginning of the eruption, it modifies it at once. The vesicles become flattened, and may even disappear or dry up completely.

Should the vesicles be full when the stomach trouble comes on, the flow of lymph to decrease and in a few moments entirely disappear.

Lymph cannot be collected under these circumstances; on the contrary it is necessary to treat the tympanites and wait. A few hours often is all that is necessary for the skin to regain its softness and for the vesicles to return to their normal condition. Notwithstanding the great care exercised to prevent the vesicles on the belly

of a heifer from being torn or broken, they will be more or less injured.

This is an inconvenience difficult to avoid, but the importance of which need not be over estimated.

If the surface of the vesicles are torn, they need not on this account lose either their contents or their intrinsic value. For this reason there is no necessity to try to avoid this accident of tearing, as could be done by placing a pad over the abdomen of the animal and by changing the ordinary litter for a floor with an opening which will allow the escape of excrementitious matter.

The greatest danger to the vesicles however, and one which must be carefully guarded against, is, that the animals will lick the wounds and thus wash away the vaccine just deposited there. This itching sensation which cause the animals to lick themselves, is evident immediately after the vaccination and during the eruptive stage. We can avoid this means of sterilization and bruising by placing the animal in a stable, in which she cannot turn, or by putting on a muzzle. For the same reason it is always advisable to secure the tail of the animal, which can easily be done by placing a splint upon it thus preventing the animal from bending its tail. This simple procedure to a great extent lessens the ease with which the animal approaches its mouth to the vaccinated region. The development of the vaccine vesicle is a phenomenon with which you are all familiar. I will therefore not dwell here in order to describe it.

The collection of the vaccine lymph is a procedure which requires a great deal of care and judgment, or you will be likely to collect nothing but inactive serum.

Vaccine lymph is nothing but serum holding in suspension small spherical bodies, *micrococci*, which constitutes the active principal of the lymph. The presence of these bodies gives to the lymph a thick sticky mucilaginous character.

This gummy feel is altogether wanting in serum, which has not the active principal of vaccine in it.

The lymph may be collected from the vesicles under pressure of forceps made for this purpose, the use of which is not by any means an objectional feature.

After the scab and other foreign matter has been removed from the vesicle, they should be gently pressed with a clean linen rag slightly damp and should blood flow it must be removed in this way until it has entirely stopped.

In a few minutes serum or lymph will start, which may be recognized by the following test: That is to take a small quantity of it between the fingers and thumb; if it is sticky as a solution of gum, it is *prima facie* evidence that the lymph is good, but if this sensation or condition is not to be had, then the vesicle must be abandoned.

If it is desired to collect the vaccine lymph in tubes, it is allowed to



form on the surface of the vesicle in little pools and in the pools thus formed we may place a vacuum tube, or a capillary tube open at both ends, which soon becomes filled.

Such tubes, however, are of little value, as they become useless in a few hours. When mixed with equal parts of distilled water and glycerine, it may keep five or six days.

#### GLASS PLATES.

Those which I have seen were prepared by English propagators of vaccine lymph. As a means of preserving vaccine in a liquid state, it belongs to past ages and should certainly be relegated to them, so that its place may be supplied by other more certain and more practical methods.

#### IVORY POINTS.

This is certainly the best method of preserving animal vaccine in a dry state.

These points when properly prepared will retain their activity for three or four weeks.

In every instance the points should be double charged, the second charge must not be made from the animal which supplies the first.

This gives greater security, for should the first charge have been made from a negative animal, or from a negative vesicle, only by the slightest chance would the second charge be of the same character.

Points destined for a long voyage are triple charged and are afterwards dipped in a solution of gum arabic and the whole covered with tin foil.

#### VACCINE IN PULP—THE VESICLE ALONE.

This barbarous practice was used in the early days of animal vaccination. It consisted in excising the vesicle with a portion of skin down to the subcutaneous connective tissue. As far as the results of this method are concerned, I have nothing to say—as with an execution, it is merely the brutality of the practice. The wound made on the abdomen of the animal, from which blood flowed in streams, and the uncanny appearance of the piece of skin, scarcely an attractive thing to place under the eyes of the person to be vaccinated. But in order that the results of this practice be satisfactory, it must be used at once; if placed on one side for use at any period more or less remote, crowds of inconveniences present themselves.

#### GLYCERINE PULP.

This method consists of using the whole vesicle. It was first introduced in Milan, when they excised the skin with the vesicles, which they fix to a board with strong pins. The vesicles are scraped and with this scraped skin they make a glycerinized pulp or paste. This is placed in a bottle and a little pure glycerine placed on it, which acts as a coat or stopper to exclude the air.

This pulp was improved on by Warlomont, by removing from the surface every impurity, even the so-called vaccine scab. After this is done, he says that by a special process, the core of the vesicle is reduced to a thin mass; this is treated with glycerinized water and the emulsion obtained is put in cylindrical tubes of amber colored glass.

This emulsion keeps so well, that he advises vaccinators to habitually carry one of these phials in their cases for use at times of need.

While doubtless this emulsified animal tissue, and this is what it must be if it is the scraped vesicle, may be good enough for European practitioners, but I would not ask an American practitioner to use any such compound.

I believe that I have made a glycerinized vaccine, which is very much better than Warlomont's, even as much superior as his is an advance on the old method of using the entire vesicle.

The process is remarkably simple and there is nothing wonderful or exciting about it.

The first step is to thoroughly cleanse the vesicle of every particle of foreign matter, and as the pure, clear lymph wells up from the depths of the vesicle, to collect it in a small spoon. It is impossible not to collect shreds of tissue and foreign matter at the same time. The lymph as collected is placed in a small phial and an equal weight of chemically pure glycerine is incorporated with it. This is afterwards filtered, not only making a beautifully clear liquid, but also removing all foreign matter.

This solution, or glycerole of lymph, will keep and be absolutely sure in its results for a number of months.

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#### XXXII. Importation of Foreign Rags into American Ports.

By F. S. WILSON, M. D., of *Jarrettown, Pa.*,  
Late Lazaretto Physician at the Port of Philadelphia.

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The people of Philadelphia are to be congratulated in that the State Board of Health, under whose auspices this convention is held, selected this city for the holding of such an important convention. Anything that concerns the public health is important, and any meeting or convention that has for its object the enlightenment of the public upon any matter or subject that ameliorates its condition while sick, or protects it from danger while well, is one that not only appeals to the highest intelligence, but the careful consideration of any community. Philadelphia, a city that long ago took the front rank in medical science, and still maintains it by her encouragement and fostering care, has been prompt in aiding all scientific enterprise; it is meet, therefore, that this convention should be held within per pre-

cincts. The subject which I have been selected to discuss in this paper is "Importation of Foreign Rags into American Ports," and I would that it had been placed in more able hands. The subject is one of considerable interest to health authorities, and in the past has been the cause of much embarrassments to quarantine officers. More than a year ago I addressed a letter to the Secretary of the Treasury, giving my views upon the subject, and perhaps my position then will be better understood if I read the letter and reply in full:

"JARRETTOWN, *March 17, 1885.*

"HON. DAN'L MANNING,

*"Secretary of Treasury Department, Washington D. C.:*

"SIR: In view of the possible advent of cholera into this country this season, I would respectfully call your attention to the subject of rags from infected ports. It is a subject that not only concerns the public, but more particularly is it a cause of anxiety to all conscientious quarantine officers whose duty it is to protect the public from pestilential disease. Last season in the exercise of my duties as Lazaretto physician for the port of Philadelphia, I had little to fear from this source, from the fact that we had very little shipping from any of the infected ports; and as cholera did not appear in France; until the 10th of June, and the subsequent order of your predecessor, the late Secretary Folger, placing an embargo for three months on the importation of all rags, left us little to fear for last season. But this season the conditions and circumstances governing the case will be quite different; the collectors of rags in France, Italy and Spain whence cholera appeared last year will have had ample time to collect them and get them baled preparatory to shipment. To stop the importation of rags for a limited time does not solve the difficulty nor avert the danger; for it is a mooted question with medical men and sanitary experts, how long the germs of disease may remain active in rags or any other nidus, and while they may not agree as to the exact time the poison continues to be virulent, I believe they all agree that its potency is not lost under a year. To stop the importation of rags for a long period would seriously cripple one important branch of commerce and greatly interfere with a large industry in this country, that of papermaking. To overcome this difficulty there should be some feasible plan whereby all interests could be subserved, and I think there is; and hence would respectfully suggest that an order might issue from your department to all United States Consuls and consular agents abroad that no rags could be shipped to this country from countries where cholera did exist or had existed last year, unless they bore a proper and legal certificate from the above officers that they had been thoroughly and effectually disinfected, or, what in my opinion would be decidedly preferable, that they had been reduced to pulp before they were shipped. The rags that are imported are

used in papermaking and if they were reduced to pulp before being shipped, the reduction would most effectually destroy all the germs of disease that they might contain and not interfere with the object for which they are imported, and the cargo become as harmless as one of iron or stone. To have them disinfected after they reached this country would entail considerable labor as well as expense. They are shipped in bales, tightly compressed, each one weighing from four hundred and fifty to five hundred pounds; these bales would have to be undone to be properly disinfected, and various places would have to be established in this country for disinfecting purposes. I think the most feasible plan would be to compel the shippers to have them reduced to pulp before they are shipped to this country.

"All of which is respectfully submitted.

"F. S. WILSON,

"*Lazaretto Physician, Jarrettown, Pa.*"

"TREASURY DEPARTMENT,

"WASHINGTON, D. C., *March 23, 1885.*

"Dr. F. S. WILSON,

"*Lazaretto Physician, Jarrettown, Pa. :*

"SIR: In reply to your letter of the 17th instant I enclose herewith a copy of this department's circular of December 22d, 1884, which prescribes the mode of disinfecting old rags imported into the United States, and have to state that should a modification of such instructions be deemed necessary at any time the suggestions contained in your letter will be duly considered.

"Very respectfully,

"CHARLES E. COON,

"*Assistant Secretary.*"

Since then the Treasury Department, believing that the question belonged to the local health authorities exclusively, has divested itself of the puzzle and thrown the responsibility entirely upon the latter. Since writing the above letter, in a conversation which I had with a paper manufacturer, he took the view that if rags were reduced to pulp before being shipped it would destroy them as an article of commerce. However that may be, from such *ex parte* evidence, I am not prepared to say; but I do know that such a process would render them entirely safe, a consideration not unworthy the best thought. Cargoes of old rags have always been looked upon as suspicious in European ports, and now, when we know that cholera has raged in portions of Europe for the last two years, that suspicion deepens here into the conviction that such cargoes, without disinfection, are unsafe and should not be received into American ports. Whether cholera is dependent upon the *comma bacillus* of Koch, or the bacteria of other investigators, I am not prepared to say; nor do I care, believing that this is not the time nor place for such discus-

sion. It is not my purpose to deal in glittering generalities, or to weave fine-spun theories in regard to the etiology of this disease, leaving for others the task of clearing away the mist that surrounds its cause at present, and to content myself with trying to prevent its introduction into this country.

But if we are to accept the germ theory of this disease which at the present stage of scientific experiment seems to be the most probable, then we know we have in rags a most convenient as well as efficient vehicle for the transmission of such germs. In further illustration of this point let me here relate what occurred in my own private practice more than a year ago. I was attending a case of malignant scarlet fever in a child, whose mother at the time was also sick of a non-contagious disease and who subsequently died. Two months after her death there was held a public vendue on the household goods and effects, and among other things sold were some unsewed carpet-rags which were purchased by a woman living two miles distant; shortly after this purchase she sewed the rags together, her two little daughters assisting her and in a few days thereafter both children were taken with scarlet fever, the elder of the two recovering while the younger died in less than twenty-four hours; a few days after this death another child, a boy fifteen years old, took the disease and died in twelve hours.

There were no other cases of scarlet fever in the neighborhood, and there had been none for a long period when this first case occurred, and there had been no communication between the children of the two families; and therefore the appearance of the disease in the second family, I think, was clearly traceable to the infection held in the carpet-rags. Now, if such a condition is possible in a few carpet-rags, is it unreasonable to suppose that a similar condition might not exist in a cargo of rags? Rags have a commercial value, of which I am not unmindful, and for the following data I am indebted to the custom house records. For the year 1885, there were brought into Philadelphia one million six hundred and fifty-nine thousand three hundred and forty-seven (1,659,347) pounds of rags (not woolen) carried as freight, whose valuation was forty-eight thousand nine hundred and fifty-six (\$48,956) dollars; but this valuation is small compared with the commercial loss this city would sustain if visited by an epidemic of cholera; for such loss, even in dollars and cents, not saying anything of the loss of life, would not be measured by thousands but millions, and who would be able to calculate the withering influence of such a blight, or estimate the wide-spread misery and desolation that would be left in its wake. Far be it from me to say one word or do one act that would in any way cripple the commerce of this port, or paralyze any branch of it, for pride for my native city, if guided by no higher motive, would preclude the possibility of such action; but if I am called upon to choose between the annihilation, if need be, of one

branch of commercial industry and the protection, welfare and safety of nearly a million of people, then I have no hesitation in declaring publicly that I am for the safety of the people first, last and all the time. The health and safety of the people are paramount to everything else, and it should be the first consideration with all boards of health, health officers and quarantine officers to keep this steadily in view, and so execute the health laws to meet this end. A board of health is nothing if not positive. A quarantine officer also is nothing if not positive. Health laws generally are stringent, and made for the benefit of the people at large, and must be executed fearlessly, though minor interests suffer. But it does not follow from this that determination cannot be coupled with civility, that decision cannot be rendered without giving offence, that maintenance of the law cannot be had without the loss of gentlemanly instinct.

This question of the importation of foreign rags into American ports must be met and met boldly too; and now, it is no time to delay in the matter, there is no half way ground, we must either admit them under restriction or exclude them altogether. What is the remedy? Speaking from the standpoint of a quarantine officer, I would say 'admit them under certain limitations and restrictions, which it is the right and bounden duty of the health authorities of this country to impose,' and if the shippers of these rags will not conform to this rule, then I would exclude peremptorily from every American port every pound of rags. The question will be asked, perhaps, of what are these limitations and restrictions thus imposed to consist. I answer, thorough disinfection of the rags before being baled and before being shipped by such processes as the health authorities of this country shall prescribe. Happily the Board of Health of Philadelphia has recently passed a resolution embodying the points which I have just been considering, and so long as I shall have the honor to represent Philadelphia in my present capacity, it will not only be a pleasure but I shall consider it my imperative duty to enforce that resolution without fear or favor. It is to be earnestly hoped that every board of health in the United States will take up this subject and treat it in the manner in which the Philadelphia Board of Health has, so that there will be coöperation all along the line, and that harmony of action upon it which its importance demands. In the performance of sanitary work we need the encouragement and coöperation of the people and no matter how difficult the task, how heavy the burden or how great the danger, if we know that the people are with us in invoking the majesty of the law in upholding our authority, it lessens the task, lightens the burden and conceals the danger. One can appreciate the responsibility a quarantine officer assumes when it is considered that he stands as a wall of fire between pestilence and the population of a large city; but even this responsibility becomes less irksome when he knows that the people are back of him, ever ready to uphold him in

the prosecution of a good work. And here let me say, if you will pardon the digression, that too much praise cannot be given to the State Board of Health for the pains and care it has taken in getting up this convention to familiarize the people of this city with sanitary work.

So also is much credit due the Philadelphia Board of Health for instituting that house to house inspection last year, and whose order in reference thereto was so faithfully and fearlessly carried out by her efficient health officer, reinforced by the scientific and chemical knowledge of her learned port physician; the work was well conceived and well executed, and will no doubt result in lessening the number of cases of zymotic disease.

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APPENDIX G.

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THE  
GEOGRAPHICAL DISTRIBUTION  
OF  
Consumption of the Lungs and Malarial Disease  
IN THE  
STATE OF PENNSYLVANIA.

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By WILLIAM PEPPER, *M. D., LL. D.*,  
*Provost and Professor of Theory and Practice of Medicine in the University of  
Pennsylvania.*

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At the regular meeting of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, held at the State Capitol, Harrisburg, Thursday, November 12, 1885, the following resolutions were adopted :

*Resolved*, That this Board has learned with deep interest of the methodical and searching investigation into the territorial distribution of consumption in this State now being prosecuted by Prof. William Pepper, believing that it will not only add to our general knowledge of the causes of this most wide-spread and fatal of all diseases, but that it may also result in the discovery of regions of comparative exemption from its ravages within our own borders.

*Resolved*, That this Board bespeaks the cordial co-operation of physicians throughout the State in making this effort fruitful of results.

*Resolved*, That Prof. Pepper be requested to put his deductions into such shape that the Board may be able to utilize them for the public good in its annual report.

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## THE GEOGRAPHICAL DISTRIBUTION OF CONSUMPTION IN PENNSYLVANIA.

The State of Pennsylvania measures from east to west 290 miles; from north to south, 150 miles; having an area of over 45,000 square miles. It is a distinctly mountainous State. The Allegheny and Blue Ridge Mountains course diagonally through the central portion from the north-east corner to the south-west; upon the one side the drainage is toward the Atlantic seaboard, and upon the other toward the valley of the Mississippi.

Professor Lesley has suggested a topographical division of eastern Pennsylvania into the South-eastern or the Seaboard district, and the Middle or Appalachian district.

The former is bounded on the west and north-west by the Kittatinny or North Mountain. The latter is bounded on the south-east by the Kittatinny Mountain and on the north by the escarpment of the Allegheny Mountains. The valley of the south-eastern district is underlain by the Lower Silurian limestone, forming rich, fertile soils, and, in the north-western part of the district, by soils disintegrated from the Hudson River slates and shales.

The Appalachian district of the eastern part of the State has been subdivided by Professor Lesley into the (1) Catskill or Pocono wilderness at its eastern end, (2) Anthracite Coal Region, (3) the open country of the middle Susquehanna, and (4) the mountains of the Juniata country, in the heart of which lies the Broad Top coal-basin.

The Pocono division is the continuation of the Catskill Mountains in New York southward into north-eastern Pennsylvania embraced within the counties of Wayne, Pike, Monroe and Lackawanna, and may be said to practically end in the Nesquehoning Mountain west of the Lehigh River. The north-western part of this division, lying to the east and south of the eastern end of the Wyoming-Lackawanna Valley, consists primarily of an elevated plateau cut through by numerous streams running in many instances in narrow and deep valleys. The elevation of the summits range from 1,200 to 1,800 feet above tide-level. The soils of the district are poor and cold; the region is sparsely settled, but is one of the most healthy sections of north-eastern Pennsylvania.

Passing upward from the counties of the south-eastern portion, we meet successive chains of mountains; first the Blue Ridge, stretching from Allentown, in Northampton county, to Chambersburg, Franklin county, varying in elevation from 2,000 to 1,000 feet; next the

Blue Mountains, from Delaware Water Gap to Gettysburg, reaching an altitude of 2,000 feet. Between the Blue Mountains and the Alleghenies, still farther to the north and west, lies the valley of the Susquehanna River, the branches of which drain parallel chains of long and narrow mountain ridges of unusual uniformity. This Appalachian valley is an undulating plain having a width of from 10 to 18 miles, and is one of the most attractive portions of the State. Its elevation is from 200 to 600 feet.

A glance at the map will show where the Susquehanna has cut its way through successive chains of mountains. These notches at numerous points afford a passage to the Delaware, the Lehigh, the Schuylkill, and the Susquehanna, and in this way an area equal to two-thirds of the State is drained across the whole breadth of these mountain chains.

Among these ridges and valleys are broad areas of table-land preserving the same general elevation of the ridges, in the neighborhood of 2,000 feet. Upon this table-land are found, on the north, Kane, Clermont, Williamsville, in McKean county. To the southward, in Indiana and Cambria counties, we have Indiana, Ebensburg, Cresson; still farther south we have Somerset, Berlin, and Fairhope; in Sullivan county we have Laporte and Eaglesmere. Nearly all these points have an elevation of over 2,000 feet.

This area of table-land, comprising in the aggregate one-fourth of the State, rises abruptly as one approaches from the east, and forms a marked barrier 175 miles in length.

Not only is the middle portion of the State more diversified, rivers and their valleys being interspersed through the mountain ridges, but there is a marked difference between its geological character and that of the remainder of the State; it is much older. According to the estimates of geologists, the mountain ranges were at one time ten times as high as they are at present. At no point in Pennsylvania do we now find elevations greater than 2,500–2,700 feet. The upper strata have been swept away from the whole Susquehanna Valley region, leaving the old red sandstone and the older rocks of the Silurian age. When an attempt is made, mentally, to restore the coal beds stretching from the anthracite region at Wilkes-Barre and Scranton to the Pittsburgh coal fields, together with the accompanying strata, not now seen in Central Pennsylvania, we get some idea of the enormous extent of erosion in the middle of the State. According to the estimate of Professor Lesley five miles of overlying strata had to be removed before the present formations were exposed.

Pennsylvania is noteworthy for its thorough drainage. There is scarcely a lake in its entire extent, and few swamps. The wet lands are of very small area, and are found in Crawford and Mercer counties. They do not have an important bearing upon the health of com-

munities. Many of these swamps are covered by laurel thickets, and most of them are less than a mile across their widest portion.

An illustration of the important relation which topography has to the health of inhabitants may be given as follows: McKean county is made up of high elevated plateaus, extensively serrated by rapidly descending narrow valleys having various directions. The valleys descending toward the north and north-east are exposed to the unfavorable storm winds which generally blow from that direction, particularly south of the great lakes. The valleys descending toward the south and south-west are shut off from these winds, and get the full benefit of the warmer winds, coming from the south and south-west, and which are more favorable to healthfulness.

The number of counties is 67; the number of physicians is about 5,000, as nearly as can be estimated. This brief statement indicates the large scope of the inquiry I have started upon. The purpose in view and the points to which it is proposed to direct special attention are shown in the following circular, which has been sent to fully 650 physicians throughout the State:

1811 SPRUCE STREET, PHILADELPHIA.

DEAR DOCTOR: At the meeting of the American Climatological Society to be held in Philadelphia in May, 1886, I propose to deliver the presidential address on "The Causes and Distribution of Consumption in Pennsylvania." I can obtain from the last census the population of each county and the mortality from consumption. I am having prepared elaborate maps showing the peculiarities of soil and climate of each county. But I need further facts, which can only be obtained from experienced physicians in each township. I have drawn up the following questions, which appear to cover the points of chief importance. They are arranged so that in many cases an answer may be given by underscoring a word or by a monosyllable; but, though aware of the labor involved, I beg you to coöperate in this investigation by affording the fullest information possible. Detailed statements of instances of special mortality in families or localities will be highly valuable. A sketch, even though rough, of the local conditions in the latter cases would be of great service.

The great clinical, sanitary and industrial importance of this investigation will, I trust, justify this appeal for your prompt and cordial coöperation. It may be added that full acknowledgment will be made of all such kind assistance: Yours respectfully,

WILLIAM PEPPER.

1. Name of town and population (stating year)?
2. Height above sea level?
3. Location of town (exposed, sheltered, warm, cold)?
4. What winds—north, south, east, or west—most prevalent?

5. What is the atmosphere generally (cool, warm, dry, damp; do fogs occur)?
6. Annual amount of rain (number of inches, great, small, medium)?
7. Annual amount of snow (great, small, medium)?
8. Is there much shade from woods about the town; through the streets? Has it been necessary to cut down trees for health?
9. Soil (geological structure, sewers, ponds, bays, meadows, marshes, hills, valleys)?
10. Cultivation of soil (very rich, good, medium, poor)?
11. What winds are most troublesome to consumptive patients?
12. Is the town specially liable to sudden changes from heat to cold; and is there any marked difference between the temperature at noon and at night?
13. Employment of the citizens in general—farming, factories, mining, lumbering, etc.?
14. Nationality of the citizens (American descent for several generations, Germans, Irish, Jews, negroes, other nationalities)?
15. Is consumption prevalent or rare?
16. Is there any part of the town peculiarly liable to the prevalence of consumption?
17. If so, what are the peculiarities of the spot or district?
18. Are there any individual houses where consumption has been specially frequent? If so, is there hereditary influence? And what are the conditions of the house as to dryness, dampness, amount of shade, etc.?
19. Is consumption specially prevalent or specially rare among any class or any race—specially Americans, Jews, negroes—or any occupation?
20. Does consumption run an acute or chronic course in your cases?
21. Do you know of any cases of incipient consumption apparently cured by coming to or by going from your town or district (and, if so, what were the differences of the spots)?
22. Is consumption, as you see it, caused or promoted by hereditary influences (and in what percentage of cases)?
23. Can consumption be apparently prevented from occurring in children so hereditarily disposed, and by what means?
24. Have you any evidence in support of or against the contagious or infectious character of consumption?

25. Is malaria prevalent in your town? If so, is consumption specially prevalent in the malarial districts?

26. Is rheumatism prevalent in your town?

27. Is pneumonia prevalent in your town?

28. Is Bright's disease prevalent in your town?

It will be seen that the above questions aim at securing information about the general climatic, topographical and geological relations of consumption, and especially about the influence of different local conditions rendering or tending to render the disease peculiarly rare or peculiarly prevalent; about the relations of occupation, race, and heredity to the occurrence and course of consumption and some other diseases as regards the above local and general causes. Considering the amount of time and labor required to answer carefully, even in the briefest manner, so many questions as the above circular contains, I feel that the fact of having received 120 replies representing forty-seven counties, many of them of elaborate character, is ample proof of the interest felt by the profession in this investigation, and calls for the warm expression of my thanks, which I now beg to make to all of my correspondents. In addition to the material thus placed at my disposal, I have made liberal use of the mortality and vital statistics as prepared by Dr. John S. Billings for the census of 1880. Nor can I neglect this opportunity of referring to the great practical value of this colossal work. Despite the serious defects of the statistics resulting from the absence of any national system of registration of vital statistics, such as is relied upon by all other civilized nations for the purpose of ascertaining the actual movement of population, the improved method employed in this tenth census and the ability shown by Dr. Billings in the arrangement and analysis of the results, render the two volumes which have just appeared highly valuable to the profession and highly creditable to the genius and energy of their distinguished author. So far as concerns Pennsylvania, Dr. Billings's statistics are based upon 2,342 returns out of 4,661 registers of death sent to different physicians in this State.

I have also used all available published mortality returns in Pennsylvania, but it is a striking fact that there are none such provided save in Philadelphia and Pittsburgh.

With these data, and using Professor Lesley's topographical map as a basis, Dr. Guy Hinsdale, to whose intelligent and energetic co-operation this report largely owes its existence, has prepared for us maps showing the prevalence of consumption in Pennsylvania counties, and the relations between such prevalence and elevation, and mean annual temperature and rain fall. It gives me pleasure also to acknowledge the kind co-operation of Dr. Hare in the collection and collation of material for this study.



As is doubtless known to you, the unit of locality used in the tenth census is the county; but, as it was impossible to give full statistics of the 2,605 counties in the United States, it was decided to give for the county only the total mortality at certain groups of ages and the number of deaths from a few diseases of special interest, and to do this only for counties having a population of 10,000 or upward. The more elaborate compilations were made for groups of counties within the limits of each State, which are called State groups. These groups were selected by Mr. Henry Gannett, the geographer of the census.

The State groups of counties can evidently be consolidated by States, or they can be combined into what the census calls grand groups, whose boundaries are determined by topographical peculiarities and not by State lines. Of these grand groups there are no less than twenty-one recognized in the tenth census, in only two of which—viz: No. 6, the central Appalachian region, and No. 8, the interior plateau—does Pennsylvania appear, the important city of Scranton being in the former group, while in the latter the cities of Philadelphia, Pittsburgh, Allegheny City and Reading are included. The counties of Pennsylvania are divided in the census into two groups, the first of which contains thirty-nine, viz:

Adams, Bedford, Blair, Bradford, Cambria, Carbon, Centre, Clearfield, Clinton, Columbia, Cumberland, Dauphin, Fayette, Franklin, Fulton, Huntingdon, Indiana, Juniata, Lackawanna, Lebanon, Luzerne, Lycoming, Mifflin, Monroe, Montour, Northumberland, Perry, Pike, Schuylkill, Snyder, Somerset, Sullivan, Susquehanna, Tioga, Union, Wayne, Westmoreland and Wyoming.

And the second twenty-eight, viz:

Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Chester, Clarion, Crawford, Delaware, Elk, Erie, Forest, Greene, Jefferson, Lancaster, Lawrence, Lehigh, McKean, Mercer, Montgomery, Northampton, Philadelphia, Potter, Venango, Warren, Washington and York.

In the preparation of Map No. 1, it has been found desirable for the purposes of demonstration to divide these counties differently, and to make four groups, as follows:

*Group I.* (Less than 500 persons living to one death from phthisis.)—Berks, Bucks, Chester, Erie, Franklin, Fulton, Lehigh, Mifflin, Philadelphia and Washington.

*Group II.* (Between 500 and 750.)—Adams, Allegheny, Armstrong, Beaver, Bedford, Bradford, Butler, Cambria, Carbon, Centre, Columbia, Crawford, Cumberland, Dauphin, Delaware, Fayette, Greene, Huntingdon, Jefferson, Juniata, Lackawanna, Lancaster, Lawrence, Lebanon, Mercer, Monroe, Montgomery, Northampton, Schuylkill, Snyder, Susquehanna, Venango and Wyoming.

*Group III.* (750 to 1,000.)—Blair, Clearfield, Clinton, Indiana, Lu-

zerne, Lycoming, Northumberland, Perry, Somerset, Tioga, Warren, Wayne, Westmoreland and York.

*Group IV. (Over 1,000.)*—Cameron, Clarion, Elk, Forest, McKean, Montour, Pike, Potter, Sullivan and Union.

Group No. 1 embraces those areas where there are less than 500 persons living for one annual death from consumption.

Group No. 2 embraces those areas where there are between 500 and 750 persons living for one annual death from phthisis.

Group No. 3 embraces those areas where there are 750 to 1,000 persons living for one annual death from phthisis.

Group No. 4 embraces those areas where there are over 1,000 persons living for one annual death from phthisis.

The same information which is displayed in this map by means of different degrees of shading is shown in tabulated form (see Table No. 2), with the addition of information as to the total population, the total death-rate per thousand, the number of persons to one square mile, and the number of square miles, the general character of the occupation of the population, and the mortality from malarial fever and pneumonia.

In considering the mortality from consumption, as shown by this table, it will be seen that there is not any striking disparity between that of the census group No. 1, which gives a rate per thousand of 14.9, and that of No. 2, which gives a rate of 13.2. This is noteworthy, since in the latter group the total population was 2,344,089, of which only 96,881 were living in the cities of Scranton, Pa. (45,850), and Paterson, N. J. (51,081), while in the interior plateau group, with a population of 5,714,683, and containing no less than 1,388,416 residents in cities (Philadelphia, 847,170; Pittsburgh, 156,389; Allegheny, 78,682; Reading, 43,278; and in cities out of Pennsylvania, 262,897), the rate of death from consumption per 1,000 population was only 14.9.

Equally remarkable is the composition of our first group of counties where there are less than 500 persons living to one annual death from phthisis, since it contains Philadelphia, with 129 square miles, and 6,567 inhabitants to the square mile.

GROUP 1.			GROUP 4.		
	Sq. miles.	Persons per sq. m.		Sq. miles.	Persons per sq. m.
Philadelphia, . .	129	6,567	Clarion, . . . .	570	71
Lehigh, . . . . .	360	183	McKean, . . . .	1,000	42
Berks, . . . . .	900	125	Union, . . . . .	310	35
Bucks, . . . . .	590	116	Montour, . . . .	600	33
Chester, . . . . .	760	110	Sullivan, . . . .	430	19
Erie, . . . . .	770	71	Elk, . . . . .	770	18
Franklin, . . . .	760	66	Pike, . . . . .	600	16
Washington, . . .	890	61	Cameron, . . . .	400	14
Mifflin, . . . . .	380	52	Potter, . . . . .	1,070	13
Fulton, . . . . .	440	23	Forest, . . . . .	376	12

It is true that in Group 4, which comprises the counties with the lowest mortality from phthisis, and which we have placed by the side of Group No. 1 for comparison, the population is in every county very sparse; yet it seems evident that mere density of population has not a powerful influence in this question. The high general death rate in Philadelphia, 20.4 per thousand, is certainly attributable in large part to other causes. However, it will be observed that all of the counties with high mortality from consumption have very little elevation, and, further, are seated in the areas of the largest annual rainfall. This remark is not applicable to Washington county, the returns from which are so much at variance with the others as to suggest inaccuracy.\*

It may be noted that in Erie county, which has considerable average elevation, the mortality may be influenced by the proximity of the lake and by the presence of a considerable body of low, wet land.

Having alluded to the possible influence of rainfall, it is proper to call attention to Map No. 2, which shows the general distribution of mean elevation and of mean annual rainfall in Pennsylvania. The figures in black indicate the general elevation of the irregular areas in which they are placed, and which are further distinguished by the varied shading. Of course, in a State of such large dimensions and of such diversified surface as this, there are points in every county which depart widely from the general average here given; but, notwithstanding, it will be found that the data of this map accord quite closely with the most important facts, and give a good general impression of the characters of the different districts.

It will be observed at once that those portions of the State where phthisis is rarest is the most elevated, having a general altitude of 1,500 to 2,000, or, better still, of 2,000 to 3,000 feet; while, in propor-

\* As further evidence of probable inaccuracy in the returns from this county, it may be stated that the statistics from the Surgeon General's office show ninety-two deaths from consumption among females and only forty among males.

tion as we enter districts of lower general altitude, we find correspondingly increasing rates of mortality from consumption. In explanation of the lines indicating mean and annual rainfall, it must be said that the small area above the isohyetal line of 35" yields an annual precipitation of from 30" to 25"; the area between the line of 35" and that of 40", comprising about two-thirds of the entire State, gives a mean annual rainfall of from 35 to 40 inches, and the area below the line of 40 inches an average annual rainfall of 40" to 45". In the area of maximum rainfall will also be found Erie county, where the average for a series of years has been 42 inches. Some general correspondence will also be noted between these areas of rainfall and the areas of varying mortality from consumption, the higher figures among the latter coinciding with areas of greater precipitation.

It will be seen further on, in the more minute study we have been able to make of Philadelphia, that the influence of elevation and of density of population appears to be considerable, and in accordance with what we have above stated. Before leaving the consideration of the general physical features of the State, attention may be called to the areas on Map No. 1, inclosed respectively by lines of black dots or of small crosses, the former of which indicate areas of standing pine, and the latter areas of standing hemlock. Unfortunately, the destruction of our timber has been so unscientific and wanton that the statement of the actually existing forestation in this as in many other States has little value from a climatic and medical standpoint, and is of only commercial interest. It is probably near the truth to say that the areas of standing hemlock represent what would have been areas of pine but for the wholesale destruction of the latter. It will be seen that these great areas correspond quite closely, for the most part, with those of the most favorable climatic conditions, and the greatest immunity from consumption.

Opportunity has been taken to place on Map No. 1 a few of the well-known health resorts of Pennsylvania, such as Pocono, North Mountain, Eaglesmere, Renovo, Kane and Cresson. The elevation of these and similar points which might be named is considerable—from Renovo, where the hotel actually stands about 1,200 feet above sea level, to North Mountain, 2,600 feet. The natural beauties and advantages of these points are unsurpassed, and nothing is required but a clearer appreciation of their excellence as sanitary stations and better facilities of access and accommodations for visitors to render them as attractive and valuable as any health resort on this continent.

As would be expected, the study of the isotherms yields results closely corresponding with those already stated as to elevation and rainfall; and, as the influence of the mean annual temperature may be regarded as only incidental where it presents such limited variations as exist here, it is sufficient to call attention to Map No. 3, in which the isotherms and the respective areas they include are shown

so as to be easily studied in connection with the facts given in the other maps.

Turning now from this general survey of the mortality statistics and climatic conditions of Pennsylvania, the more important question arises whether the data at our disposal indicate marked differences in the distribution or prevalence of consumption in areas much smaller than the counties, and whether, if so, any connection can be traced between such varying degrees of prevalence and any definite local causes or conditions. I had originally thought of preparing a map showing the geological features of the State to be studied with the other maps already described. But, as Professor Lesley pointed out to me, all the main geological formations lie at such a depth below the surface that it can not be supposed they produce any material effect upon those living above them; and, on the other hand, the surface conditions are so numerous and diverse that it would be impossible to portray them even for a much smaller area than the one we are considering. It will be observed that the list of questions sent to physicians throughout the State included several which were framed with the special object of securing information as to local conditions which might thus affect the frequency and cause of consumption.

Dr. Bowditch attributed the result of his investigation entirely to the presence in his circular of two questions suggested by Dr. John Ware, namely: "Is any portion of your town peculiarly liable to the prevalence of consumption?" and "If so, what, if any, are the peculiarities of the spot?" It will be seen that in my circular, which was prepared after consultation with Dr. Bowditch, I included these same two questions (see 16 and 17); and others were inserted in the hope of eliciting information of this special and definite character.

Let us now turn to a detailed study of the 120 answers which have been received, for which they have been carefully tabulated under the heading of each question, and, further, an abstract of the answers from each county has been prepared, which is given in the appendix.

As the point of special interest in the investigation is most directly touched upon by Questions 15 to 19, inclusive, the result of the answers to these will first be considered. In response to the question, "Is consumption prevalent or rare?" there are 112 replies, of which sixty-four state that the disease is rare or very rare, thirty-seven that it is prevalent, and eleven that it is moderately prevalent.

From the counties making group No. 1, excluding Philadelphia, which will be separately discussed, there are twenty replies, of which thirteen state that the disease is rare and seven that it is prevalent. Yet it will be noted that these replies are all from counties which give the highest mortality from phthisis—a fact which shows conclusively how wholly insufficient are the data at my disposal for enabling me to draw any general conclusions. From the counties making group No. 4, the general statistics of which show an annual mortality from

phthisis of more than a thousand living, I have been able to secure only four replies, one of which states that the disease is prevalent, one that it is moderately prevalent, one that it is rare, and one that it is very rare.

In regard to Question No. 16, "Is any part of the town liable to the prevalence of consumption?" I have received 109 replies, of which eighty-six are negative and eight affirmative. The first of these affirmative answers is from Dr. George F. Horton, of Terrytown, Bradford county, who states that, although the disease is rare and fifty per cent. of the cases are due to heredity, it is comparatively frequent in that part of the town which is situated on the river and where malaria also is prevalent.

A second affirmative answer is from Dr. H. A. Arnold, of Merion Square, Montgomery county, who states that, although consumption is seldom met with and seventy-five per cent. of the cases are hereditary, there is one house in the hollow where three cases of consumption occurred within a short time. The special characters of this house will be considered shortly.

The third affirmative answer refers to South Bethlehem, with a population of 5,000 inhabitants, at an elevation of 400 feet. Consumption is not markedly prevalent, but a certain part of the town on made ground, lying low near a brook, which acts as an open sewer, is thought to be associated with the prevalence of the disease. It can not be said that any individual houses have been specially the seats of this disease.

The fourth affirmative answer is from Dr. H. H. Bordner, of Shamokin Dam, Snyder county, which is a small village of 300 inhabitants at an elevation of 800 feet. Low and swampy areas are associated with phthisis; so also are certain damp houses. Consumption is especially prevalent in malarial districts.

The fifth affirmative answer is from Dr. W. T. Bailey, of Dillsburg, York county, who says that while consumption is rare in this town, with a population of 500 and an elevation of 1,065 feet, there is a central part of the town where it is frequent. All of the houses in that area have damp cellars and yards.

The sixth affirmative reply is from Dr. J. C. Gable, of York, York county, who says that consumption is prevalent in the damp portions of the town, where the houses are all more or less damp.

The seventh affirmative reply is from Dr. T. J. Ward, of Ridgway, Elk county, a town of 2,000 inhabitants, with an elevation of 1,437 feet. Consumption is moderately frequent, but nearly all the cases have occurred in the neighborhood of a tannery on the north side of the town near the Elk Creek.

Dr. R. Leonard, of Mauch Chunk, Carbon county, in a communication received too late to embody in the tables, say; "The mountain is

so steep and high on the street as to put the dwellings on that side in the shade. At one point there are about twenty dwellings upon which the sun never shines for three months of the late fall and early winter. It is here that consumption especially prevails. There is a marked difference in the number of cases on the north and on the south sides of the street, the south side giving the greater number. The Second ward, situated upon a bluff 200 feet above the First, is open and exposed to all winds. Here consumption is not so prevalent, though pneumonia and rheumatism are frequent."

The statistics obtained from Philadelphia may be taken as an eighth affirmative reply. This city has the largest population, many wards having from 120 to 150 inhabitants to the acre. It varies in elevation from 0 to 440 feet. Consumption is prevalent. A glance at Map No. 4 will show at once those wards having the greatest mortality from phthisis. They are the First, Second, Third, Fourth, Fifth, Seventh, Eighth, Ninth, Sixteenth, Seventeenth, Eighteenth, Twenty-seventh, Twenty-ninth and Thirtieth. A study of this chart will also show that these wards are in general characterized by a low elevation, greater density of population, and, on reference to the chart of water-supply, water of inferior quality.

In a communication from Dr. F. F. Davis, of South Oil City, Venango county, occurs the following interesting paragraph bearing on this question :

"Oil City is built partly on the north side of the river and partly on the south side or left bank. On the north side, part lies low and wet, with insufficient sewerage, and part lies high on a hill—about 150 feet above the river. On the south side one part is on the second bottom of the river, 30 to 35 feet above the river, and has a porous soil underlaid by gravel; part is on the hill, 100 to 200 feet above the river. Consumption is about *as common in one part as another*. I think consumption causes about 20 per cent. of adult deaths. It did the year I kept the record for the Census Bureau."

It will thus be seen that the vast majority of my correspondents deny the existence of any center in their town where consumption is specially prevalent, but that, in a few instances where such special localized prevalence is asserted to exist, the local conditions are those of dampness, bad drainage, and excessive soil moisture, which are generally believed to favor the development of the disease. It is evident, however, that, unless continued inquiries which I hope to make shall elicit additional information at variance with the general tenor of the replies thus far received, it must be conceded that the evidence available does not point to excessive soil moisture as the main causal condition of consumption in this State.

In regard to Question No. 17—"If there are any parts of the town peculiarly liable to consumption, what are the peculiarities of the

spot or district?"—there are but seven who reply that they have noticed any such peculiarities, and these speak of damp yards and bad sewers, and low ground by the riverside.

In reply to Question No. 18.

As to any individual house where consumption has been especially frequent, there are ten replies. The evidence of these replies is not, however, entirely concordant. On the one hand, Dr. W. G. Stewart, of Newville, Cumberland county, writes that, in one house, five young persons from ten to seventeen years of age died of consumption. The parents were robust and healthy, and there were no hereditary influences. The house, however, was shaded by large and numerous trees and was damp, with no drainage; water stood in the cellar, and the house was built on what is called "spouty land," and, further, it was not well ventilated. In another house in the same town, with bad ventilation, wet cellar, and no drainage, there was a large family, with hereditary tendency, who died of consumption. Dr. W. D. Bailey, of Dillsburg, York county, in like manner describes a house with several repeated fatal cases of consumption where the local conditions of the house were very unfavorable.

Dr. H. A. Arnold, of Lower Merion, Montgomery county, describes a house in a hollow, fifty yards east of a brass mill, where in three cases, two of them children from fourteen to sixteen years of age without heredity, and one an adult of consumptive family, all ended fatally. The locality was damp, and especially was the air charged with vapor from the melted brass, so that the case is complicated by the possible action of these irritating particles as a cause. In the other instances it is distinctly stated that hereditary influences co-existed.

Dr. William P. Noble, of Upton, Franklin county, writes :

"There is one house in the town in which the members of an entire family have died from consumption, but in this instance there was an hereditary influence, with, perhaps, a local condition favorable to the development of the malady. The house is of stone, well shaded on the north, east, and south, and is cool and damp even in warm and dry weather. The grounds surrounding it, which are ample, are of a damp, marshy character, and occasionally I have noticed gaseous matters escaping from it which were quite perceptible to the smell. The family spoken of consisted of the parents and four daughters. The father died at the age of sixty, the mother at fifty, and the daughters between twenty and thirty. For a number of years I noticed that all the cats kept about the premises took consumption and died of it. The family now living in the house, with the exception of one daughter, has been free from any symptom of the disease. The daughter, eighteen years of age, had several slight hemorrhages about one year ago, but I am not positive that they were of tubercular origin. She



was in a pretty fair health in the spring, at which time she went West. I learn that she has been enjoying good health since then."

Dr. J. E. Rigg, of Stonerville, Westmoreland county, writes :

"Mr. and Mrs. Lane came to this township when young, seemed to be very healthy, lived to be quite old, and died without any evidence of lung trouble. Nothing known of their family history. They lived almost entirely in the basement of a stone house, which was damp and very poorly ventilated. In this part of the house they raised six children; all lived to manhood and womanhood. Since then four of the six died of consumption; the other two know nothing of the four who remained here and died of consumption. Two of them married one man of very good family history, he being of good health. The man is now suffering from consumption, having lived with the two women in all about thirty years. The children of the four whose history we have (the grandchildren of the old couple, Mr. and Mrs. Lane, some ten in number), all have consumption; some have died, others advanced, and others yet just beginning. Change of climate has been tried with some, but with little benefit,

"Their habits were good; as a rule, little shade about the house. Spring of water just outside the wall of the basement."

In an interesting series of cases which came under my own observation, I had the question of heredity and of local influences studied carefully by Dr. Judson Daland with the following results :

Mrs. Jane Kief Garrity's mother was eighty-three years old when she died after two weeks' illness. Exact cause unknown. Her father was eighty-three years old when he died of kidney disease. They both were vigorous and strong, as were the rest of their immediate family as far as Mrs. Garrity could remember; they all lived and died in Ireland. She has five brothers, who are living and healthy to the best of her knowledge. One sister died in 1879, when fifty years of age, rather suddenly, after four days' illness; the exact cause is unknown, she had asthma and malaria, and was very anæmic when Dr. Reid saw her. The remaining sister is alive and healthy.

Mrs. Jane Kief Garrity is now fifty-two years old, has always been stout and hearty, and is so yet. She married when about eighteen years old, just one year after she left Ireland; never showed tendency to pulmonary disease. Began menstruating when about thirteen years of age. This function ceased about one year ago.

Mr. Robert Garrity married the above when he was thirty years old; never developed tendency to pulmonary disease; was always well and strong; always a hard worker in a mill, where he was exposed constantly to great extremes of heat and cold; was probably a regular drinker of whisky, though never to excess except in two instances. He occasionally suffered from abdominal (internal?) colic from over-indulgence in cold water when heated. He died in 1871, when fifty years of age, from the effect of a severe burn received at the mill.

His father died when over ninety years of age. He had no special disease. Probably simply died of old age. He was always a hard worker. No lung trouble whatever. His mother died rather suddenly when seventy years of age. Cause unknown. If she had had phthisis, Mrs. G. would have known it.

One brother died early of variola. The remaining two brothers are probably alive and well.

His four sisters are all living and healthy.

*Mr. and Mrs. Garrity's Offspring.*—1st. One boy was born in Pottsville about 1851, and died, after two days' illness of croup (?), when fifteen months old. All children subsequently were born in an old house on the west shore of the Scuykill river, in Conshohocken, Pa. They moved to new house, their present home, in 1875-76.

2d. Boy was born in 1857, lived ten months, and died of summer complaint.

3d. Lizzie was born in 1858 and seemed healthy. No serious illness. Menstruation began late, when eighteen years old. She worked in a woolen mill, the air of which is filled at all times with fibers, dust, etc., but Dr. Reid says the other two hundred girls did not develop pulmonary diseases more frequently than those having other occupations. Her fatal illness lasted about six months. (Age at death twenty to twenty-two.)

4th. Mary was born in 1860. Always rather thin, but never sick. Began menstruating when sixteen or seventeen. Fatal illness began in March, 1882, and terminated (ten months) in January, 1883, in her twenty-second year.

5th. Mary Jane was born about 1863. Was stout and hearty. Menses began when fifteen years old. Began losing flesh before going to the mill, where she remained one year. She died, when twenty-one years old, October 25, 1884, after six months' illness.

6th. Annie was born in 1864. Always well and strong. Worked two years in a mill. Died in December, 1882, when nearly nineteen years old, after six months' illness.

7th. Julia, born in 1866, worked in a mill until two years before her death, which occurred from phthisis in February, 1882, in her sixteenth year, after an illness of eight months.

3th. Robert, born in 1868. Always well and strong; is tall and seems strong. Chest rather poorly developed, shoulders overhang, stoops; pulmonary resonance good everywhere. Now working in an iron mill about as his father did. Now seventeen years old.

9th. Katie, born in 1870, and therefore fifteen years old, always strong and well. Now looks the picture of health and strength. Stout, well developed; menstruates. Chest full, well shaped, and expands well during inspiration.

All of the girls had small waists—so much so as to suggest tight lacing. All the cases began the same way, with slight hacking cough,

irregular fever (partially influenced by ext. chinchonæ fld., or Warburg's tr.), rapid pulse (90-110-120), pains in the chest, which expectoration would increase; only occasional slight attacks of hæmoptysis; profuse night sweats; and cessation of the menstrual flow. Gastric digestion poor.

The disease would begin at one apex, infiltrate that lung, and then infect the other. Toward the last cavities would form.

While sick they were carefully nursed and placed in separate rooms, rendering the notion of contagion improbable.

Careful cross-examination failed to associate the beginning of these cases with any direct exciting cause other than the mill.

Dr. Reid believes all the cases were complicated by malaria.

The average duration of the disease was six months, except in Maggie's case, which lasted nine months.

*Topography, Hygiene, Drainage, etc.*—The house in which the children were born was situated on the west bank, about one hundred feet from the Schuylkill river. The situation is exceedingly bad, all the drainage being on the surface, and emptying into the river. Once or twice a year there would be a freshet, and this particular spot is so situated that the swift current strikes the shore with great force and deposits six or more inches of thick, bad-smelling mud. After each freshet there would be an outbreak of intermittent fever. In this neighborhood there are cases of malaria, more or less, all the time.

The drinking water was obtained from a well, and was poor in quality. The soil is so porous that it would be easy for matter to drain into it.

Twenty families were also exposed to the above unfavorable influences, but pulmonary diseases were no more frequent than elsewhere. They moved to present house about 1868 or 1870.

The house where these cases developed is situated within a few feet of the top of a steep hill, about 600 or 700 feet from the river and 80 to 90 feet above the level of the river. The ground is *dry*, composed chiefly of shale and small flat pieces of stone. The cellar is perfectly dry and clean. The drainage is all above ground, and the cess-pool is some distance from the house. The rooms are all clean, large, airy and well ventilated, though all the ceilings are low—about seven and a half feet high.

The drinking water is obtained from a well, and seems to be of good quality. I could find no source of contamination.

This house and its location seem to me to be particularly healthful (excepting the low ceilings).

JUDSON DALAND.

As would be expected, the answers to many of the questions bearing upon points of climate and topography are so varied as to render it impossible to draw any conclusions from them. Thus, in regard to

the prevalent winds in those localities where consumption is frequent, it is only when, as in certain locations, the trend of mountain ranges or of rows of high hills, is such as to render towns in the inclosed valleys accessible to the winds which sweep through these valleys from certain quarters, that it can be said the prevailing direction of the winds has a definite bearing upon the tendency to pulmonary disease.

A glance at Map No. 1 will show that this remark applies to a number of interior counties, as Fulton and Mifflin, which are traversed by parallel mountain ranges, so as to favor this effect of the wind.

Dr. Davis, of Venango county, writes :

"Our winds are very variable, sometimes blowing from different directions two or three times in a day." "The winds most dreaded by our consumptive patients are when an east wind has been blowing (or one from the south) the wind suddenly changes to the north, producing a sudden fall of temperature."

While, however, the evidence is thus meager and conflicting in regard to the influence of local conditions upon the origin and prevalence of consumption in various parts of the State, the responses to Question 22—"Is consumption, as you see it, caused or promoted by hereditary influences, and in what percentage of cases?"—are strikingly uniform. This question is answered more or less fully in 94 of the communications I have received; in 87 the reply is affirmative; in only seven instances does the writer deny the existence of heredity in his cases of consumption. The percentage of cases in which heredity has been noted is stated in 31 replies. Only once is it given as low as twenty-five per cent., six times as fifty per cent., twelve times at from sixty to seventy-five per cent., seven times at from eighty to ninety per cent., and as existing in every case in three replies. This concurrence of belief in the great power of hereditary influence upon the development of consumption is, of course, in accord with general belief, though I confess it is more uniform and positive than I had expected to receive.

As bearing upon the current discussion of the contagious or infectious character of consumption, the replies to Question 24 are interesting. This question was, "Have you any evidence in support of or against the contagious or infectious character of consumption?" There were forty-five affirmative replies.

Dr. William D. Bailey, of Dillsburg, York county, relates an instance in which a house had been built in an excavation in a hillside and which had a small yard on the east and south; this yard is always damp. As the house is in the shape of the letter L, little or no air can sweep through it; neither do the rays of the morning sun reach it until high up.

"In this house I have attended two cases of consumption—sisters. Both terminated fatally; the eldest died after suffering about three years; the younger slept with her, and soon after her death took it

and died in about five years after. I observed what I thought alarming symptoms in a third sister, but forbade her sleeping with the affected sister, and now she is in reasonably good health. I can trace no hereditary taint in the family."

Dr. C. B. Wood, of Monongahela City, Washington county, Pa., is firm believer in the contagious character of consumption, and offers the following evidence :

CASE I.—Three children in a negro family died of consumption, all under twelve years of age. The father and mother died of the same disease a few years later.

While the children were sick and dying, a robust young man—negro—whose parents are strong, healthy people, boarded with this consumptive family, during which time he was taken sick, and in his case were present all the symptoms of consumption excepting hemorrhage, and those symptoms found after there is an actual destruction of lung-tissue. He was sick about three months, was greatly emaciated, and I thought, must surely die, but he recovered, and is strong and healthy to-day, after five years.

*Treatment.*—Change of boarding-place, cod-liver oil, syr. hypophos. cp., rich milk, and a little good whisky.

CASE II.—A young woman aged twenty-six, unmarried, came to her aunt's to live, or rather die, as she was in the last stages of consumption.

A cousin of the consumptive slept with her. After several weeks' attendance I was asked to see the girl (whose age was eighteen). She complained of pain in apex of right lung, had a cough, had been having night-sweats, loss of appetite, and physical signs of disease in the lung.

I at once ordered her not even to stay in the same room with the consumptive, placed her under treatment, and she recovered and is living to-day in good health.

CASE III.—Mr. A., a farmer, died of consumption. His wife, whose family history was excellent, was taken sick shortly after her husband's death, and died of consumption within two years.

CASE IV.—Now under my care. Young woman, married four years ago. Husband had hemorrhages previous to marriage. Two years after marriage went to Mexico to practice medicine, was taken worse, and died of consumption. The wife was with him probably two and a half years altogether of their married life. Her history on father's side not very good, on mother's side excellent. But, when I remember what a picture of health she was previous to marriage, I cannot but believe that her husband, at least, caused the development of her present disease, consumption, if latent, if he did not sow the seed. She spent the last two winters in Boston, and is now in Monongahela City with her mother. Her present condition is alarming, and she is now undoubtedly in the second stage of consumption.

Dr. J. J. Koser, of Shippensburg, Cumberland county, relates a case in which consumption occurred in a lady thirty-six years of age, apparently contracted by nursing a relative of her husband's, who died of consumption about a year before she consulted Dr. Koser. She was then moderately far advanced in disease. She had no history of consumption in her family, but, on the part of her husband's family, there was a history of consumption, and, about a year and a half after death of the wife, the husband died of the same disease. They had three children who are apparently healthy at the present time.

Dr. Carr, of Schuylkill county, writes :

"I have known several women who were married to consumptive men, and several men who married consumptive women. The children on both sides were apparently healthy till they began to arrive at the age of puberty, when they showed signs of consumption, thus showing an hereditary taint; the parents who were healthy being in good health, while those that were suffering from consumption have died; and many of the offspring died of well-marked consumption, in its acute form, as they arrived at the ages of eighteen or thereabouts."

Question No. 19—"Is consumption specially prevalent or specially rare among any class or race—especially Americans, Jews, negroes—or any occupation?" Twenty-five stated that no class was specially affected, or that all classes were equally affected; 21 stated that the disease attacked chiefly Americans; 14, negroes; 5, Irish; 2, Germans; 3, Swedes; 1, Indians (Carlisle); 4, miners; 3, axe-grinders; 2, cotton-factory operatives; 1, stone-cutters.

#### Philadelphia.

More careful attention has been paid to Philadelphia, because here alone has it been possible to secure such data as are required for an intelligent study of the distribution of consumption.

It is to be hoped that, if this report contributes to nothing else, it will aid in bringing our authorities to appreciate the lamentable absence of all careful records of mortality outside of this city. Even in Pittsburgh the mortality returns, which were secured through the courtesy of Dr. W. H. Mercur, are defective in not giving reports from the individual wards, though in other respects interesting and valuable. And in not one of the smaller cities have I been able to learn that complete mortality returns are regularly printed and published. I have even been assured by my correspondents, in some cities of 50,000 to 70,000 inhabitants, that it is entirely possible for a corpse to be interred without a physician's certificate, as to cause of death, and without official registry of burial.

In approaching the study of consumption in Philadelphia, several tables were prepared, which are given in the appendix. During the past twenty-six years the mortality from phthisis in this city has been

about 60,000 out of a total mortality from all causes of about 400,000. The uniformity with which the rate of 14 per cent., as that of the proportion of deaths from phthisis to total mortality from all causes, is maintained year after year is remarkable.

Table No. 2 shows the proportion of the deaths from consumption occurring at different periods of life.

The same excessive mortality from this disease among negroes, which is noted at every part of the State where any considerable number of this race resides, is conspicuous in the returns from Philadelphia. The total mortality of negroes from phthisis during the past twenty-four years has been 4,327, while the average annual negro population during this time, of about 25,000, would have yielded a mortality from consumption of only 1,900 deaths were the rate the same as among the rest of the community. The mortality returns are not sufficiently minute to enable any statement to be made as to the mortality of the various individual foreign elements which contribute, largely to our population. In 1880 the deaths from phthisis among the foreign-born were 1 in 266. To state the case in another way: In the foreign population the mortality from phthisis for twenty-five years has been 18,189, whereas the average death rate from phthisis, as determined from the whole community, would have rendered 15,125 the proper total of deaths from phthisis for the foreign born. It is evident that, if the deaths from phthisis among negroes and among the foreign-born were deducted from the total, the mortality from this cause among the white native-born citizens of Philadelphia would appear truly as being much smaller than is commonly regarded.

The deaths from phthisis among the native white population are 9.3 per cent. of the total mortality, and, excluding negroes and foreign-born, there is one death from this disease in every 506 of the population.

It has been found impossible to obtain complete statistics as regards the mortality from phthisis among the Jews, a point of considerable interest in consequence of the prevalent notion that this race is remarkably exempt from that disease. I am indebted to the kindness of Dr. Isaac Leopold for the following figures, which give the burial records for the past ten years of a Jewish cemetery and of a Jewish beneficial society. They show that, of 611 deaths, 58, or 9.5 per cent., were due to phthisis, while in the entire community the proportion is 15.4 per cent.

A chart has been prepared by Dr. Hinsdale showing the relation which the mortality from phthisis in Philadelphia in each ward, during the years 1860, 1870 and 1880, bears to elevation and density of population. The position of the wards is noted as to river frontage, rural districts, etc.

It is remarkable that the greater mortality from phthisis coincides with low elevation and greater density of population. Another table

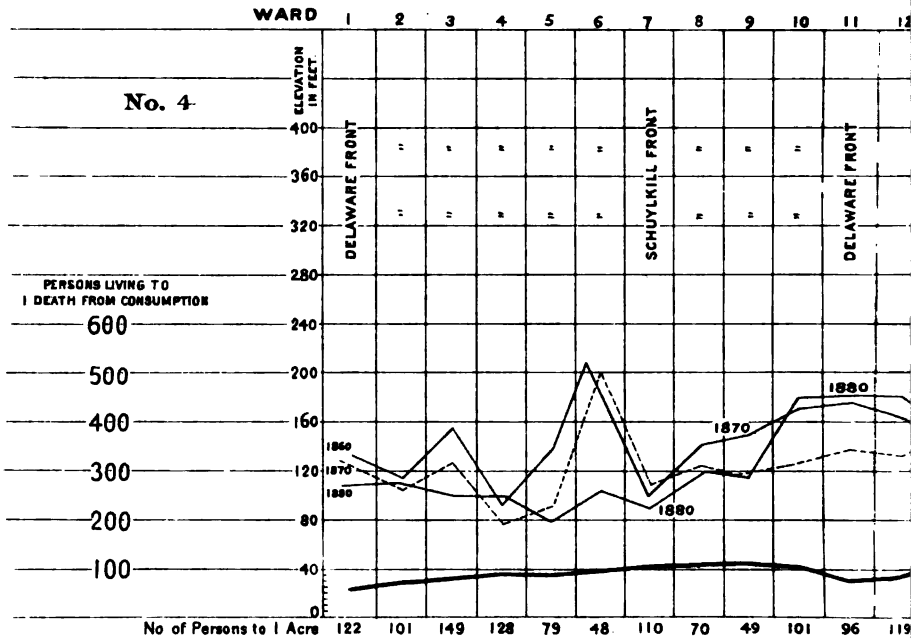
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# CHART SHOWING RELATION OF MORTALITY FROM CONSUMPTION IN PHILADELPHIA

FOR 1860

Designed by G. B. BROWN

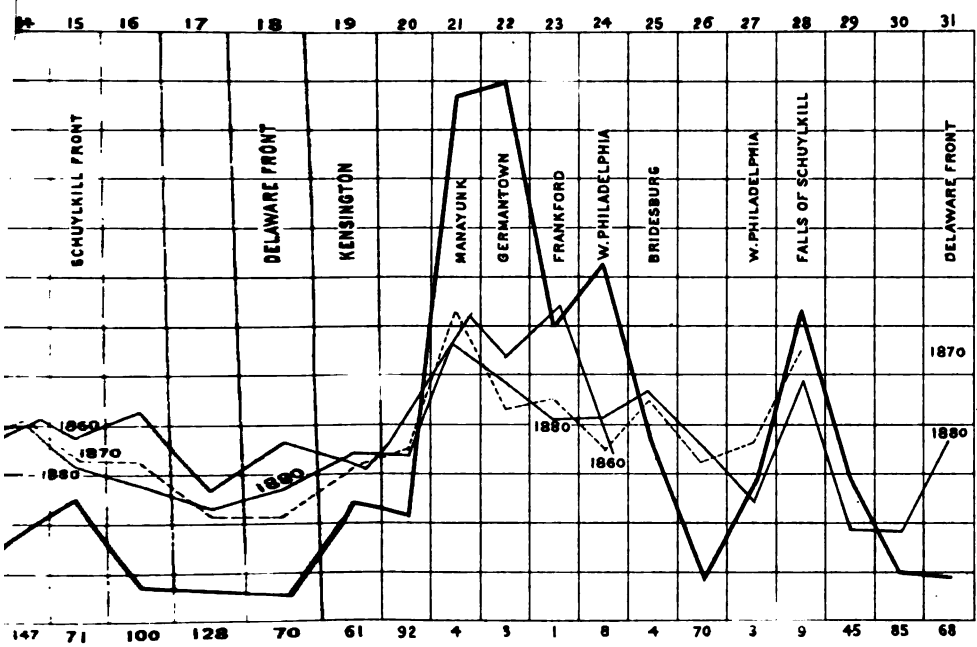


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# PHIA TO ELEVATION AND DENSITY OF POPULATION, BY WARDS.

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edale, M. D.



ES SHOW THE NUMBER OF PERSONS LIVING TO ONE DEATH FROM CONSUMPTION.



shows that the wards where phthisis is more frequent are supplied with water from the poorer pumping stations.

In an article on "Consumption in New England," by Dr. E. P. Hurd, of Newburyport, Mass., published in the "Boston Med. and Surg. Jour.," March 29, 1883, several interesting facts are brought out. In Newburyport, during twenty-five years, there has been an average population of 13,500. It is the type of an old seaport and fishing town, having a nearly stationary population of an old American ancestry. It is cold and chilly. During this period the deaths from phthisis were one-sixth of the total mortality, or one in 285 of the population. He shows that in 1880, among those of American parentage, there was one death in 351; among those of foreign parentage, one in 136.

Dr. J. Curtis, in a study of phthisis in Boston made forty years ago, found that between 1821 and 1848 the deaths from phthisis were to total deaths as 1 : 5.76.

Hayward found that in New York city between 1820 and 1850 the ratio was 1 : 5.54, or 18 per cent. of the total mortality.

Dr. E. M. Snow found that in Providence, R. I., between 1840 and 1854 the deaths from phthisis were one in 209 of total population; between 1856 and 1881 they were 16.69 per cent. of the total mortality, or one in 317 of the total population. He also shows that in 1880, among those of American parentage, there was one death in 435; among those of foreign parentage one in 268.

The ratio in Philadelphia in 1880 was one in 316 of the total population, which, it is to be borne in mind, is by far the worst ratio found in Pennsylvania. The deaths from phthisis are 15.4 per cent. of the total mortality.

I am also able, by the kindness of Dr. Mercur and of Dr. Snively, of Pittsburgh, to include among these statistics the very careful records of the mortality from phthisis in that city. They extend from 1875 to 1886, and show that this disease is not so frequent in Pittsburgh as it is in Philadelphia.

Calculations from these statistics show that the deaths from phthisis during eleven years were 9.2 per cent. of the total mortality. There was, in the year 1880, one death from consumption for 497 persons living. The corresponding figures for Philadelphia are 15.4 per cent. and 316 persons living for one death from phthisis.

Among the foreign-born in Pittsburgh there was one death in every 327 persons living; among the negro population there was one death for 367 persons living.

Summary of Replies from 120 Practitioners in 47 Counties of Pennsylvania.\*

**BERKS COUNTY.**—Two replies. Mohnsville; population, 500. Sheltered. West winds prevail. Air cool and damp. Fogs occur occasionally. It is a town with many shade trees. There are ponds, meadows, hills and valleys. The soil is of medium quality. There is a considerable fall of temperature at night. The people are engaged in farming and in factories, and are chiefly American and German. Phthisis is rare. There has been only one death from phthisis in four years in this town. It assumes a chronic course and is hereditary. There is no malaria, and only occasionally rheumatism, pneumonia and Bright's disease.

Reading; population, 43,278 (1880); elevation, 280 feet. Sheltered and warm. The air is warm and dry. Fogs are rare. There is not much shade outside the town, but there is abundance in the streets. No trees have been cut down for health. The rock is limestone and there are many features providing ready underground drainage. There are deposits of clay. There are few marshes. There are hills to the east and south. No marked changes in temperature. The population is mixed, and is engaged chiefly in factories. Consumption is moderately prevalent, and possibly more so in the newer districts. Cotton-factory employes and marble-cutters are especially prone to phthisis. The disease usually runs a chronic course. There is one death from phthisis for 389 persons living. The general death rate is 15.8 per thousand. Phthisis is both caused and promoted by hereditary influences in the majority of cases. Malaria is prevalent, but has no relation to phthisis except as it may bring about "consumption from congestion." No prevalence of pneumonia, rheumatism or Bright's disease.

**BUCKS COUNTY.**—Three replies. Falls township; elevation, 40 feet. Sheltered. North-west and south-west winds prevail. The air is warm and dry; fogs occur. Rainfall, 42 inches. Snow, 30–40 inches. Little shade. There are meadows. Soil, clay and gravel; of medium quality. No marked atmospheric changes. The people are of American descent and engaged in farming. Consumption is rare. There is a house where consumption has been especially prevalent; it is a stone house on a dry knoll with little shade. The disease is chronic, and the reporter's cases are in females chiefly. Seventy-five per cent. are hereditary. Malaria is prevalent, but consumption is not specially prevalent in malarial districts. Rheumatism is prevalent. Pneumonia and Bright's disease are not.

New Britain; population, 150. Sheltered. West winds prevalent.

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\*I take this opportunity to express anew my sense of obligation to the numerous correspondents whose valuable replies to my circulars and letters cannot be adequately presented here.

Soil very rich, sandy, and well cultivated. North-east winds troublesome to consumptives. No great atmospheric changes. People engaged in farming and of American descent. Moderate amount of consumption. The disease is usually chronic; most cases are hereditary, the exciting cause being malaria in nearly every case. In two cases attendants contracted phthisis. Malaria is prevalent. Rheumatism, pneumonia and Bright's disease are not.

No. 3. Point Pleasant; population, 300. In a sheltered position on the Delaware river. Fogs occur. There is abundant shade. There are hills and valleys. Soil of medium quality. East winds troublesome to consumptives. No marked atmospheric changes. The people are Americans, German and Irish, and are engaged in farming and lumbering. The disease is usually acute; it is hereditary, but skips generations; it may be propagated from husband to wife. Malaria occasional. No prevalence of pneumonia, rheumatism or Bright's disease.

CHESTER COUNTY.—Five replies. Three reports from West Chester; population, 8,000; elevation, 412 feet; exposed; mean annual temperature, 50°. North-west and south-west winds prevail. The air is dry and there are few fogs. Rain fall, 48.4 inches. Small amount of snow. The streets are well shaded, but there are no woods near. The soil is a loam from decomposed igneous rock. There is clay. There are swamps, but the land is generally well drained; but few sewers. The soil is rich. South-east winds are troublesome to consumptives. There is no great liability to sudden atmospheric changes. There is a great fall of temperature at night. The people are engaged in farming. Consumption is moderately prevalent. It pursues a chronic course, is hereditary, and is frequent among negroes. The reporter thinks the disease is contagious. No prevalence of malaria, rheumatism, pneumonia and Bright's disease.

Another report from West Chester says that east winds trouble consumptives the most, and that there is no great fall of temperature at night; also that phthisis is not prevalent, but that a few houses in the country that are low and shaded seem to be particularly associated with phthisis. The reporter, Dr. Jacob Price, has known cases cured by removal to elevated western localities; he says heredity is a strong factor, and that contagion occurs; on the other hand, that liberal diet and out-of-door life may prevent the disease in children predisposed to it.

A third reporter estimates the hereditary cases at 25 per cent., says the disease is not specially prevalent, and believes in contagion.

No. 4. Unionville; elevation, 350 feet. Sheltered, warm and cold. West winds prevail. Atmosphere is variable. The soil is good and is on a Silurian and Laurentian base. There are ponds, meadows, hills and valleys. East winds are troublesome to consumptives. There are sudden atmospheric changes. The people are engaged in farming

and are of American descent. Phthisis is rare; it is chronic; hereditary in 75 per cent. No malaria. Rheumatism is prevalent. Pneumonia is not prevalent. There are a few cases of Bright's disease.

No 5. Springfield; elevation, 557 feet. Exposed and cold. Fogs occur. It is not shaded. Soil is good and is clayey. Marked changes in temperature. Occupations are farming and mining. Consumption is rare. No part of town or house is liable. The disease is both acute and chronic. East winds trouble consumptives. Ninety-five per cent. due to heredity. Children can be protected by good hygiene. No evidence in support of infection. No malaria. Little rheumatism and pneumonia or Bright's disease.

ERIE COUNTY.—Erie; population, 27,730; elevation, 573 feet. One annual death from phthisis in 433 inhabitants. Situation exposed. Mean annual rainfall, 42 inches. Mean annual temperature, 49.3°

FRANKLIN COUNTY.—Three replies. No. 1. Greencastle. Consumption is rare. In over 1,200 patients the reporter has only 15 cases of phthisis, 3 of which had hereditary taint. No part of his town peculiarly liable to the disease. The employment is farming. Americans and negroes, with a few Irish and Germans, suffer. No particular houses are afflicted, unless in cases of decided humidity. Course is always chronic in his practice. Phthisis is hereditary, but in 20 per cent. of his cases (three cases) there was no heredity, the cases occurring in girls at puberty. He states that disordered menstruation is the most common cause of the disease where no heredity exists. He has never seen the disease in males without heredity. He has never seen it prevented, and knows of no reason for believing it to be contagious. Malaria is not prevalent. Rheumatism is quite prevalent. Pneumonia not prevalent, nor Bright's disease.

No. 2 writes from Upton; population, 165; elevation, 693 feet. It lies in an exposed, cold situation. Atmospheric changes are great. Employments are agricultural and mechanical. Citizens are Americans for several generations. Consumption is rare, and no part of town is peculiarly liable. There is one house in which a whole family have died from this malady, hereditary influences and other unsanitary causes being present. Consumption does not affect any class or nationality in particular, and the disease is as often acute as chronic. No cases have been affected by going from or coming to the town. Fifty per cent. of cases are due to heredity. Reporter has no doubt that children with hereditary influence can be saved by hygienic precautions. Has no evidence as to infectiousness. No prevalence of malaria. Rheumatism is frequent. Pneumonia not very frequent. No prevalence of Bright's disease.

No. 3. Chambersburg; population, 9,000; elevation, 605 feet. Sheltered; temperature moderate. North-west winds prevail. Air signally moist; not foggy. Limestone. Soil good. Phthisis not very

prevalent. Not liable to sudden changes from heat to cold. Trades, factories and farming. Americans, Germans and negroes form the population. No part of town is peculiarly liable. There have been particular houses afflicted; hereditary influence present; surroundings good. The disease occurs most in negroes and mulattoes, and among these is very fatal and rapid. Runs chronic course in whites; acute in negroes. Patients have had hemorrhages here, have gone to Colorado and have recovered; on returning been ill again; but, on going West, have recovered. Seventy-five per cent. due to heredity. Can be prevented by hygienic measures. *Has plenty of evidence of infection.* Thinks it much more frequently contagious than is generally believed. No prevalence of malaria, rheumatism or pneumonia.

No. 4. St. Thomas; population, 550; elevation, 800 feet. Town is dry. No sudden changes from heat to cold. People, farmers; of American descent for several generations. Consumption is prevalent. No parts of town or houses are peculiarly liable. It is not more prevalent in one race than another. It runs a chronic course. No cases have been caused by coming to town. It is promoted by hereditary influence. No prevalence of malaria, rheumatism, pneumonia or Bright's disease.

FULTON COUNTY.—No replies.

LEHIGH COUNTY.—No replies.

MIFFLIN COUNTY.—Four replies. No. 1. Milroy; population, 750; elevation, 600 feet. Town is exposed and cool; is liable to sudden changes in temperature. The air is cool and damp. Fogs seldom occur. Agriculture and mining, factories and lumbering, are the pursuits. Germans and Irish form the population. Consumption is very rare. No part of town is liable particularly. Phthisis runs an acute course; "but few cases have occurred in many years." No cases of the disease have been cured or made worse by coming to this town. Milroy is located at the foot of the Seven Mountains, on the south side of the mountains and east end of Kishicoquillas Valley. The ground or soil on which it is built is all of made earth or wash from the mountains, to a depth of an average of twenty feet—the greatest depth is about forty feet—and of mountain soil, sand and pebbles, with large bowlders. There are caverns. There is a mountain stream of considerable size flowing rapidly through the town, and sinking under a limestone ridge near the center of the town, making its appearance again in a much larger stream two miles south of Milroy. I have been informed that one entire family, except one member, a female about forty years of age, died of consumption. The family consisted of father, mother, four daughters and one son. Another family consisted of father, mother, four daughters and three sons. Three of the daughters died of consumption. There was, in my opinion, nothing to indicate hereditary disease in either case. "I have not seen any



cases of hereditary influence in twenty years, or since my sojourn here."

In a practice of over forty years; Dr. Harshberger has seen cases prevented by proper diet and regimen, cod-liver oil, iron, etc. No proof of infection. No malaria, pneumonia, rheumatism or Bright's disease.

No. 2. Lewistown; population, 4,000; elevation, 800 feet. Not exposed. Disease is not prevalent. There are often rapid changes from heat to cold. Soil alluvial; limestone. Has had but six cases in large practice in a year. Negroes are most often affected. Phthisis is not prevalent, and no part of the town or houses peculiarly liable to its prevalence. It runs a chronic course generally, and is promoted by heredity. The reporter has never seen any case benefited by going from or coming here, but believes that the disease can be prevented in childhood by hygienic measures. No evidence that it is contagious. Malaria is slightly prevalent in autumn.

Twenty-six, 27 and 28, negative answers.

No. 3. Newton Hamilton. Town sheltered and cold. South and west winds prevail. Air is cool and damp and foggy. Much shade. Town liable to sudden changes of temperature. Occupation, farming. Phthisis prevalent. No part of town is liable. He knows of a house peculiarly liable, where there is hereditary influence. No race particularly liable. Phthisis almost always promoted by heredity. No evidence as to infection. Malaria is very prevalent. Twenty-six, 27 and 28, negatively answered.

No. 4. McVeytown; population, 700; elevation, 522 feet. Exposed. On the Juniata river. Soil alluvial; clay. Not liable to sudden changes of temperature except in summer. Fogs from August to November. Population, Americans and a few negroes. Consumption is rare. No part of town or any house is liable. Phthisis is somewhat prevalent among negroes. Runs chronic course. All cases are inherited. Can be prevented by hygienic measures. No evidence in support of contagion. Malaria is prevalent. No relation to phthisis. Rheumatism, both acute and chronic, is prevalent. Pneumonia and Bright's disease not prevalent.

PHILADELPHIA COUNTY.—See page 477.

WASHINGTON COUNTY.—One reply. Monongahela City; population, 3,000; elevation, 749 feet. Sheltered. East and west winds prevail. In winter and spring there is much damp weather, with heavy fogs in winter and late autumn. There are sudden and extreme changes of temperature: in summer the mercury often reaches 98°, and in winter—18° F. There is a medium amount of rain and snow. There is shade in the streets; trees should be cut down. Soil alluvial and good. East winds troublesome to consumptives. The people are engaged in farming, factories and mining; they are of American descent, mining population, mixed. Phthisis is said to be "not preva-

lent to any great extent, and yet we have quite a number of cases, chiefly hereditary." No part of the town and no house and no race are associated particularly with phthisis. This disease runs a chronic course. The reporter, Dr. C. B. Wood, says: "Some cases have been benefited by going to the Pacific coast; others to Texas; others to the North-west. None benefited by coming here; on the contrary, I think it an injury to them." In ten years Dr. Wood has met with but one acquired case, and he believes that incipient phthisis can be cured or prevented by out-door life, keeping away from school, proper diet, ventilation and medicine. Dr. Wood is a firm believer in the contagious nature of consumption, and offers four cases in proof. Malaria and Bright's disease are not prevalent; rheumatism and pneumonia are.

N. B.—The returns as given in the census from this county are so much at variance with those from neighboring counties that there is almost certain and flagrant inaccuracy. The report gives 92 deaths from consumption among females and only 40 among males.

#### Group II.

ADAMS COUNTY.—No. 1. Dr. Pearson, writes: "York Sulphur Springs is situated in the northern part of Adams county, at the foot of a mountain-range, in what may be called a rolling country. It is about 800 feet above sea-level; with a population of about four hundred, and is protected on the north and west by the foot hills of South mountain. I have practiced here since 1850. My practice takes in a scope of ten or fifteen miles in Adams, York and Cumberland counties, and includes both mountain and valley. Forty years ago the country was heavily timbered. Since then much of the timber has been cleared away, land and buildings improved, and inhabitants live much more comfortably than years ago. And, as a result of these improvements, diseases of all kinds have diminished. Although not more subject to consumption than other localities, I have found it to prevail alike in mountain and valley. Our population is mainly native-born, descendants of German and Scotch-Irish, so that I have had no opportunity of observing the disease in different race or nationality, but do not think there would be any material difference.

"I can hardly say that consumption is a prevalent disease. Yet it is seldom that there are no cases in the country. I have not found it to prevail in any particular house or any particular locality, but affecting the poor and affluent alike in mountain and vale. The great majority of cases are, undoubtedly, hereditary. I have known whole families carried off by it.

"Hereditary cases are generally considered chronic, and run their course very slowly; while cases not hereditary are acute, and are called by country people "galloping consumption." One prolific

cause of the disease, when not hereditary, is neglected amenorrhœa among young females.

"I have met with no case of prevention of the disease when hereditary; it may be baffled, and life and health prolonged, but will almost invariably make its appearance at some time, and such cases are generally rapid in their course.

"I have found the most satisfactory results as a prevention in the young, from the use of the hypophosphites, with cod-liver oil, malt and like remedies.

"I have not met with any reliable evidence of the disease being contagious or infectious. Cases have occurred where, the husband or wife having died of consumption, the survivor soon followed from the same cause. But in these cases there was as much probability of a hereditary tendency as of contagion.

"I have not found malaria to have much influence on the disease, but, our country not being a malarial one, I have not had much opportunity to determine.

"I have known of no cases that were benefited by coming into or leaving this locality.

"Rheumatism is not very prevalent, but prevails to some extent in damp or very changeable seasons.

"Pneumonia prevails to some extent during winter and spring, is mostly caused by exposure and sudden changes of temperature from damp to cold, and *is a fruitful cause of acute consumption*. Bright's disease is becoming quite prevalent."

No. 2. Two reports from Gettysburg; population, 3,100; elevation, 545 feet. On a knoll between two ridges. Rather sheltered, but dry, with a moderate amount of shade in town. Few fogs. Soil, red shale; good. South and north-east winds troublesome to consumptives. Phthisis is rare, and no part of the town suffers more than another. No houses in particular suffer. Phthisis is catarrhal and acute. A very small percentage of cases is due to heredity. It can be warded off by plenty of good food, etc. No evidence in support of infection. No malaria. Pneumonia and rheumatism moderately frequent. Bright's disease very rare.

Dr. J. W. C. O'Neal does not seem to think consumption at all rare. He speaks of one house, the cellar of which was in bad condition, where there were many cases of phthisis. There was heredity, and the habits of the people were sedentary.

The disease is most prevalent among Americans, and runs a chronic course. Is hereditary, and arises frequently from pneumonia. Children can be saved by hygienic measures. It is not contagious. No malaria; 26, 27 and 28 negative.

No. 4. Bonneauville; population, 118. The disease is rare. In spring and fall, town is cold and damp, with rapid and great changes in temperature. Farming. American descent for several genera-

tions. Where the disease has been in any particular house or part of town, it has been due to heredity. It is most prevalent among those of German descent. It runs a chronic course. All reporter's cases have hereditary taint. Much can be done for such children by guarding them carefully. Reporter has evidence of infection. Malaria is not prevalent. Rheumatism is common in spring and autumn. Pneumonia common. Bright's disease is not prevalent.

No. 5. McKnightstown; population, 160; elevation, 600 feet. Is exposed and cold, with infrequent fogs and west winds prevalent. The disease is prevalent, but no part of the town suffers more than another. Dr. Elderdice speaks of a house where the conditions are good, where there is hereditary influence, and where phthisis has been frequent. It is not particularly prevalent in any race. It runs an acute course. About sixty per cent. of cases are due to heredity. Prevention is possible in children. Dr. Elderdice considers it contagious in many cases. Malaria is prevalent, and consumption is also in malarial districts. Rheumatism and pneumonia are prevalent. Bright's disease is not.

No. 6. Littlestown; population, 1,000; elevation, 700 feet. Is exposed, with occasional fogs. Farming is the general employment, all citizens being of American descent. Consumption is rare. No portion of town or any house seems to be particularly associated with phthisis. It runs an acute course, and is promoted by heredity. Dr. Seiss does not believe it can be prevented in children predisposed. He has evidence in support of infection. No prevalence of malaria, rheumatism, pneumonia or Bright's disease.

ALLEGHENY COUNTY.—See Pittsburgh (page 24).

ARMSTRONG COUNTY.—Two replies. No. 1. Kittanning; population, 1,800; elevation, 809 feet. Sheltered. Fogs seldom occur. Medium amount of snow. Not too much shade. Soil good. East winds troublesome to consumptives. No great atmospheric changes. Citizens engaged in mills, etc. Moderate amount of consumption. There are some cases of heredity. The disease is usually chronic and hereditary. The reporter, Dr. Alter, says that in one instance a perfectly healthy wife nursed a husband for six months; after his death she had a cough and slight hemorrhage, but recovered. Another wife died within a year after her husband had died from phthisis. No hereditary tendency in either case. No prevalence of malaria, rheumatism, pneumonia, or Bright's disease.

No. 2. Worthington; population, 150; elevation, 1,100 feet. Sheltered, but cold. No excess of shade. Great changes in temperature. The occupations are farming, factories, and mining. American descent, with Germans and Irish. The disease is rare. No part of town or any house peculiarly liable. No nationality in particular suffers. The disease runs a chronic course. All cases are hereditary. Chil-

dren may escape through care. No prevalence of malaria, rheumatism, or Bright's disease. Pneumonia is prevalent.

Dr. John K. Maxwell says: "I have for forty years believed that I have seen evidence of the contagiousness of this disease. The wife of a consumptive husband, or the husband of a consumptive wife, almost invariably dies of consumption, although belonging to healthy families themselves. I am unable to say whether this is owing to contagion or infection, but in a long experience I can recall but two exceptions to the rule, in both of which apoplexy was the cause of death."

**BEAVER COUNTY.**—One reply. Beaver Falls; population, 8,000; elevation, 600 feet. The town is sheltered by high, wooded hills. West winds prevail. The air is damp and fogs prevail. Soil gravel. South-east winds troublesome to consumptives. There are marked changes of temperature. Population mixed; engaged in factories. Grinders and polishers are prone to phthisis. The disease is chronic and hereditary. Persons have been cured by going away to a warm, dry climate. There is some malaria. Rheumatism is rather prevalent. Pneumonia prevails during some winter seasons more than others. Bright's disease is not especially prevalent.

**BEDFORD COUNTY.**—One reply. Bedford; population, 3,000; elevation, 1,200 feet. Sheltered, but cold. Fogs occur. Much shade. No trees cut for health. Liable to sudden changes—heat and cold. Lumbering, farming, and manufacturing are the occupations. All nationalities represented. Consumption is prevalent. No spot in town particularly liable. There are houses particularly liable. No occupation exempt from disease. Most common among Americans and negroes. Seventy-five per cent. are due to heredity. Runs both acute and chronic course, generally the latter. Children can be saved by strict regularity in food and clothing. No malaria. Rheumatism and pneumonia common, and prevalence of Bright's disease.

**BRADFORD COUNTY.**—Three replies. No. 1. Terrytown; population, 2,000; elevation, 600 feet. The air is cool at night; warm by day. Damp by reason of frequent fogs along the Susquehanna. Westerly winds prevail. South-east winds are troublesome to consumptives. Soil good. Sudden changes of temperature are quite common. Farming and mining are the occupations. Inhabitants largely New Englanders. Consumption is rather rare; it is more common along the river, where malaria prevails; phthisis is chronic, lasting from two to twenty years, and affects all classes alike. In a practice of over fifty-five years Dr. George F. Norton finds that over fifty per cent. of cases are constitutional and hereditary. He does not believe that hereditarily predisposed children can be rescued from phthisis, but its advent may be postponed. He believes in contagion. Malaria is very prevalent along the river. Neither rheumatism nor pneumonia is prevalent, and Bright's disease has not been met with.

No. 2. Athens; population, 3,000; elevation, 750 feet. Sheltered

by hills. Warm in summer, cold in winter. Damp, with dense fogs. Considerable shade in town; too much in places. Soil rich. South winds bad for consumptives. Occupations farming, mining, etc. Consumption is rather rare. One house, where heredity was preset, was associated with phthisis. More frequent among Irish than Americans; more frequent still among negroes. Some cases are acute, others chronic; most cases are acute. It is due to heredity in seventy-five per cent. of cases. It can be prevented by hygienic measures. Has evidence in support of infection. Malaria common. Rheumatism is frequent, also pneumonia. Bright's disease rare.

Dr. E. P. Allen, who has practiced over forty years, writes :

"I have seen a few cases where the husband died of consumption and the wife's death followed in a few years, from three to five, and could trace no hereditary influence to attribute the disease.

"I have known a father, two daughters, wife, three sons, comprising every member of family, to die of consumption, though from the death of the father to the death of last member of family was thirty-eight years. Another family, consisting of five sons and two daughters, all of whom died in a period of twenty-three years. The father did not die of consumption, but from an injury on the head, several years prior to death of first child. The mother is still living and healthy. Heredity on side of father. A number of other cases might be reported quite as strong. No unsanitary conditions about houses or premises could be detected, such as shade from trees or dampness. Both families lived on farms on dry and elevated land.

"Malaria made its appearance about eight years since, after an absence of fifty or sixty years, when it is said to have been quite prevalent. It has been declining the past three years, and is now rarely seen, though the word malaria is often improperly applied to sickness. Consumption is not very prevalent in the malarial district.

"Rheumatism is rather a frequent disease.

"Pneumonia may prevail at all seasons of the year among us, but it is far more frequent and fatal during the months of March and April than at any other period of the year. Its victims are mostly active business men past forty years of age.

"Bright's disease occurs now and then, but it is not a frequent disease."

No. 3. Troy; population, 1,500; elevation, 1,148 feet. Sheltered by mountains. North, south and west winds prevail; east winds rare. Fogs rare. Soil good; subsoil clay. Few marshes. The population is American, German and Irish, and is engaged chiefly in farming and lumbering.

Consumption rare and chronic; cases of phthisis cured by removal to this county. Phthisis always hereditary. No malaria. Rheumatism, pneumonia and Bright's disease prevalent.

Dr. Dare writes that Bradford county is damper than Sullivan, Tioga

and Potter counties, owing to retention of water in clay subsoil. Fogs prevail along the valleys, and especially the Susquehanna. Dr. Dare speaks of a family of Smithfield, near Troy, of which all the children have died of consumption. The house is on an elevated ridge, "but damp in consequence of the clay subsoil."

Dr. Dare's own case is an instance of the benefit of removal to Bradford county. He resided in Chester, Delaware county, in 1857, was then thirty five years of age, and had pulmonary hæmorrhage, being the only survivor of six children, all but one having died of consumption between the twentieth and thirty-fifth year. The family lived in Cumberland county, N. J. "After being prostrated one year I came to Troy, Bradford county, Pa. Since then I have had but one hæmorrhage, which occurred the following summer, and since that time I have been perfectly well." "The other members of my family were all attacked with pulmonary hæmorrhage as I was, and died in about one year after. I can see no reason, if I had remained in that section of the country, why I would have fared any differently."

BUTLER COUNTY.—No reply.

CAMBRIA COUNTY.—Two replies from Johnstown; population, 2,500; elevation, 1,200 feet. The town is sheltered and comparatively warm. North-west winds prevail. The air is cool and damp, and there are sudden changes in temperature. There are high hills. Soil is of medium quality. Consumption is said to run a chronic course, and, in a majority of cases, is hereditary. No prevalence of malaria, but rheumatism, pneumonia and Bright's disease prevail.

No. 2 says there are fogs in the autumn. There is much shade, and there are sudden changes from heat to cold. Mills and mines occupy citizens, who are German, Irish, English and Pennsylvania Dutch. Phthisis is rare. No part of town liable, nor any house. It runs an acute course. Not entirely due to heredity. No evidence in support of infection. No malaria. No prevalence of rheumatism, pneumonia or Bright's disease.

CARBON COUNTY.—One reply. Weatherly; population, 3,000; elevation, 1,200 to 1,500 feet. The town is sheltered and cold. East and west winds prevail. Air cool. Fogs occasional. There is a great deal of snow. Not much shade. Hills and valleys. Sudden changes of temperature. People of American descent, Irish and German, engaged in manufacturing. Consumption rare. No part of the town and no race liable to the prevalence of consumption. Disease chronic and hereditary. Malaria not prevalent. Rheumatism and pneumonia are prevalent, and there are some cases of Bright's disease.

CENTRE COUNTY.—Three replies. Two (Phillipsburg and Zion) state that phthisis is rare; one (Bellefonte) that it is moderately rare, not prevalent. The latter town has a population of 3,200, it is said to be in a sheltered but cold situation, liable to sudden changes of temperature and occasional fogs. Elevation 733 feet. No particular

parts of the town or individual houses are especially associated with phthisis. The course of phthisis is chronic, and the disease is hereditary excepting in the cases of axe-grinders. Rheumatism is moderately prevalent. Malaria, pneumonia and Bright's disease rare.

No. 2. Phillipsburg, 28 miles west of Bellefonte, has a population of 5,000, and an elevation of 1,450–1,500 feet. It is in a valley sheltered by hills, and is warmer than the surrounding country; dry; free from fogs. Phthisis always takes a chronic course. Malaria was traced in three instances to a local, temporary cause—the plowing of swampy ground. Many cases of malaria were cured by residence in this county.

Rheumatism, pneumonia and Bright's disease uncommon.

No. 3. Zion; population, 100; elevation, 883 feet. Exposed and cold; north-west winds prevail; fogs are rare; changes of temperature are marked. Phthisis is hereditary in 75 per cent., chronic, and frequent in axe-grinders. Rheumatism and pneumonia are prevalent; Bright's disease rare.

Farming, mining and lumbering are carried on in this county.

COLUMBIA COUNTY.—One reply. Catawissa, population, 2,400; elevation, 477 feet; sheltered; north-west winds prevail. The air is damp and cold and there are fogs; rain-fall and melted snow, 39 inches; snow, 50 inches. There is a great deal of shade, and trees have been cut down for health. Soil very rich. East winds troublesome to consumptives. Marked atmospheric changes. People engaged on farms and railroads—Americans, Germans and Irish. Consumption is rare and chronic; hereditary in 75 per cent. of cases. Malaria is prevalent, but phthisis is not prevalent in malarial districts. Rheumatism prevails; pneumonia and Bright's disease do not prevail.

CRAWFORD COUNTY.—Two replies from Titusville. Population, 8,000; elevation, 1,194 feet. Town sheltered and is warmer than the hills about it. Both reports state that the atmosphere is damp, that sudden changes of temperature occur, and that there are some fogs. One report states that east and north winds are the more troublesome to consumptive patients, and that the disease is more frequently acute, with no evidence of infection; the other report states that south-west winds are the more troublesome, and that the disease is usually chronic and that there is presumptive evidence to prove infection, all of which goes to show that doctors will occasionally disagree. Consumption is not infrequent; rheumatism is prevalent; pneumonia and Bright's disease occasional. Trees have been cut down in the streets. All occupations exist and all nationalities are represented. The Swedes are prone to die of phthisis; the Jews rarely.

CUMBERLAND COUNTY.—Two replies. Both agree as to the prevalence of consumption and its chronic course, that easterly winds are the more troublesome in this disease, and that the large majority of cases are hereditary. Rheumatism is prevalent.



No. 1. Shippensburg; population, 3,000; elevation, 660 feet. Some shale-trees have been cut down; the atmosphere is damp and fogs occur. Great changes of temperature occur, and there is a marked difference between the temperature at noon and night. The industries are diversified. The people are chiefly of American descent; negroes are numerous. Pneumonia is prevalent and Bright's disease prevails to some extent.

No. 2. Newville; population, 1,900; elevation, 526 feet. The town is exposed and cold, but dry and free from fogs. The underlying rock is limestone and slate, and farming is the chief occupation. The people are largely of Scotch-Irish descent. Negroes and Indians (Carlisle), having once contracted phthisis, rapidly succumb.

For further information see letters of Dr. John J. Koser and Dr. W. G. Stewart (pages 13 and 20).

DAUPHIN COUNTY.—No reply.

DELAWARE COUNTY.—Two replies. No. 1. Media. Consumption rather prevalent. Soil red; a clayey loam. All nationalities represented. Occupation farming. Elevation low. Fogs occasional. Malaria and rheumatism rare. Pneumonia frequent in winter. Bright's disease infrequent.

No. 2. Clifton Heights; elevation, 154 feet. Sheltered. Drained by Darby creek and Ridley creek. Country undulating. Soil good. Manufactories. Phthisis somewhat prevalent. In one house one sister and four brothers died of consumption. They all passed the age of thirty-five years. Course slow. Hereditary history. Roomy frame house, dry, on elevated ground; grove on the south. Irish children predisposed, from being put at work in factories at an early age. Here the course of the disease is quite rapid. Hereditary in 90 per cent. Reporter thinks the disease may be prevented to some extent. Malaria near brick-yard. No prevalence of rheumatism, pneumonia, or Bright's disease.

Q. No. 24. A man and wife lived together for twenty-five or thirty years and reared a large family of children. At the age of forty-eight years the wife had her first attack of hemorrhage of the lungs and developed well-marked consumption. At that time the husband was a stout, ruddy-faced Irishman, apparently in perfect health. In the course of a year he became consumptive and died before the wife. One son has since died of the same disease.

No. 3. Upland; population, 2,500; near the Delaware River. Fogs are frequent. There is a good deal of shade. Many cellars have water a large part of the year. Soil clayey. East and north-east winds troublesome in consumption. Consumption not very prevalent; occasionally hereditary and generally chronic. Cases have been cured by removal to Georgia pine-lands and to Maryland. Malaria is more or less prevalent, but bears no relation to phthisis. Rheumatism, neuralgia, bronchitis, and pleurisy are common.

FAYETTE COUNTY.—Five replies. All report phthisis prevalent. In no place is there a report of excessive shade. The population is mixed and engaged in farming, coal mining, and manufactures.

No. 1. Uniontown; population, 5,000; elevation, 950 feet. Exposed; cold. South-east and north-west winds prevail. There is not much fog; the air is cool and damp. Limestone. Soil good. North-west winds troublesome to consumptives. Considerable changes of temperature. Phthisis chronic. Americans and negroes affected. Hereditary. Rheumatism and pneumonia prevalent, Bright's disease not; no malaria.

No. 2. Brownsville; population, 4,200; elevation, 774 feet. Sheltered. West winds prevail. Fogs rise from Monongahela River in spring and autumn. Average rainfall, nine years, 36.07 inches. Limestone; clayey loam. No ponds or marshes. Good drainage. Rich soil. East winds troublesome to consumptives. Reporter says phthisis is "more rare among negroes than any other class." Phthisis both acute and chronic. Two cases have apparently been cured by going to California and one to Colorado. Reporter believes in infection. Malaria and pneumonia not prevalent. Rheumatism and Bright's disease are prevalent.

No. 3. New Haven; population, 1,000; elevation, 920 feet. Sheltered and warm. Westerly winds prevail. Fogs occur in the spring and autumn. At other times the air is dry. South-easterly winds most troublesome to consumptives. Great atmospheric changes. Americans and negroes suffer. Disease chronic and acute. Cases have been cured by removal to our mountains or going west. Hereditary in 60 per cent. No malaria. Catarrhal pneumonia prevalent; croupous, rare. Bright's disease rare; rheumatism prevalent.

No. 4. Vanderbilt; population, 1,000; elevation, 1,200 feet. Sheltered and warm; in a valley. Soil good. North-east winds troublesome to consumptives. Phthisis chronic. Malaria, rheumatism, and Bright's disease not prevalent. Catarrhal pneumonia prevalent.

No. 5. Dunbar; elevation, 995 feet; sheltered north and west. Cool, dry; no fogs. South winds troublesome to consumptives. Marked changes of temperature. One house particularly associated with phthisis; it is damp and shady. Americans chiefly affected. The disease is usually acute. Reporter has evidence in favor of infection. Malaria, pneumonia, and Bright's disease not prevalent. Rheumatism prevails.

HUNTINGDON COUNTY.—One reply. Orbisonia; population, 1,100; elevation, 750 feet. Consumption occasional. The town is exposed and cold. West and south-west winds prevail; the former are the more troublesome to consumptive patients. The air is cool and damp, and fogs and sudden changes of temperature occur. There are some ponds. The soil is of medium quality; farming and mining are the chief pursuits. The people are for the most part Americans. Phthi-

sis runs an acute course, and about half of the number of cases are said to be hereditary. No malaria or Bright's disease. Rheumatism is prevalent. Pneumonia moderately so.

JEFFERSON COUNTY.—No reply.

JUNIATA COUNTY.—No reply.

LACKAWANNA COUNTY.—Two replies from Scranton. Population, 70,000; elevation, about 750 feet. Mortality from phthisis 7.33 per cent. of total mortality. No fogs. Sudden changes of temperature. All nationalities represented; engaged chiefly in factories and mining. One reporter thinks phthisis is usually chronic and believed to be acquired, though hereditation has been noticed by the second, and his cases are acute. One reporter instances a case where a healthy wife was infected by a diseased husband. No malaria. Rheumatism, pneumonia, and Bright's disease are prevalent.

LANCASTER COUNTY.—Seven replies, One refers to consumption as very rare, two say it is rare; two, rather rare; one, prevalent to a limited extent; one, rather frequent. All excepting one (Manheim) describe their towns as exposed. The land is rich; the people are occupied in farming, are thrifty, and largely of German descent. Easterly winds are uniformly recognized as most troublesome to consumptive patients. Rheumatism prevails and malaria is not infrequent, excepting, of course, in Paradise, where the reporter not only states that consumption is rare, but denies the prevalence of rheumatism, pneumonia, Bright's disease, and says there is no malaria.

No. 1. Ephrata; population, 1,500. Situated on the north side of Ephrata Mountain, 384 feet above tide. In eleven years' practice, Dr. McCaa found no cases of acquired phthisis, and states that the few inherited cases he has met with have moved there from other places. Rheumatism and neuralgia prevail owing to change of temperature.

No. 2. Bird-in-Hand; population, 350; elevation, 359 feet. The air is cool and damp, and there are occasional fogs; there is a liability to sudden changes of temperature. Phthisis is more common among Americans and runs an acute course. Half of the cases are hereditary, and Dr. Miller believes the disease to be contagious. There are no houses, and there is no portion of the town, where the disease especially prevails.

Nos. 3, 4 and 5. Bainbridge; population, 669; elevation, 271 feet. The streets are well shaded; the atmosphere is spoken of as warm and dry, and few fogs occur. No unusual changes of temperature are spoken of by any of the observers. One says that all the cases are hereditary; the second that 80 per cent. are so; the third says that half are hereditary; all agree that the disease is chronic, and do not believe that it is infectious.

No. 6. Manheim; population, 2,000; elevation, 402 feet. Town sheltered and warm. It has been necessary to cut down trees for health. There are some ponds and marshes. Phthisis both acute and chronic.

It is hereditary and sometimes contagious; Dr. Dunlap has strong evidence of this.

Malaria prevails to a limited extent, as well as rheumatism and pneumonia. Bright's disease occasional.

No. 7. Paradise; population, 110; elevation, 359 feet. Fogs occur occasionally. The town is not liable to sudden changes of temperature. Dr. A. H. Smith does not believe the disease can be prevented in children hereditarily predisposed. He has treated but two patients in seven years—one, aged five years; the other, aged six years and a half. Both were females living within half a mile of each other at the base of a mountain. Neither family was strumous.

LAWRENCE COUNTY.—No report.

LEBANON COUNTY.—One reply. Lebanon; elevation, 466 feet. Sheltered. South and east winds prevail. The air is cool and dry. Fogs do not occur often. There is shade in the streets, and trees should be removed. Limestone. The soil is very rich. East winds are troublesome to consumptives. There are great atmospheric changes. The people are engaged in factories; they are of American descent and German. Consumption is prevalent. There are houses in which consumption has been especially frequent. They are damp, but hereditary influence is present. There are private sewers with drainage into underground fissures. Consumption is generally chronic, and is hereditary in one-half the cases. Malaria is not prevalent to any degree, and has no relation to phthisis. Rheumatism and pneumonia are prevalent. Bright's disease is not.

MERCER COUNTY.—Two replies. In neither place is malaria, rheumatism, pneumonia, or Bright's disease prevalent.

No. 1. Sharpsville; population, 1,819; elevation, 948 feet. The town is exposed and cold. North and east winds prevail. The atmosphere is damp. Fogs occur. The soil is good, being largely alluvial. Sandstone. South winds trouble consumptives. The people are employed in iron manufacturing, among whom are German and Irish. Consumption is said not to be very prevalent, and pursues a chronic course. It is hereditary in about half the cases. The reporter thinks that children hereditarily predisposed can be rescued from phthisis by removal to a dry and equable climate of high elevation.

No. 2. Sharon; population, 7,000; elevation, 950 to 1,150 feet. It is sheltered in a deep valley and warm. North and west winds prevail. The atmosphere is cool and damp. Fogs seldom occur. Few streets shaded. The country is hilly. Northerly winds are the most troublesome to consumptives. The town is liable to extreme changes of temperature. The people, mostly Irish with some Germans and fewer Americans, are engaged in the iron industry. Consumption is rare; when it does occur it is chronic. The disease is generally hereditary, but occasionally acquired. One patient from Sharon has been cured by going to Colorado. Malaria is very prevalent; it is

thought to act as a preventive rather than as a cause. Neither rheumatism, pneumonia, nor Bright's disease can be said to be prevalent.

Mercer, the county seat, having in 1870 a population of a little more than one-fourth that of Sharon, furnished about *the same* number of fatal cases of phthisis. It is said to be a well-known fact in the county that consumption is more prevalent in Mercer than in Sharon. The town is fourteen miles east of Sharon, situated on the top of a hill 450 feet above Sharon. The wind sweeps the town. The population of the former is largely native American; Sharon, largely foreign. The reporter (Dr. E. Griswold) inclines to the opinion that the general use of bituminous coal as a fuel and for manufacturing purposes secures a certain degree of immunity from phthisis.

MONROE COUNTY.—No report.

MONTGOMERY COUNTY.—Three replies. No. 1. Merion Square; population, 500; elevation, 600 feet. The town is exposed and cold. North and west winds prevail. The atmosphere is cool and dry. East winds are the most troublesome to consumptive patients. There are sudden changes of temperature. The people are of American descent for several generations, and there are many Irish; they engage in farming chiefly. Consumption is seldom met with; it assumes a chronic course. Seventy-five per cent of the cases are reckoned as hereditary. Reporter does not believe in contagion. No prevalence of malaria, rheumatism, pneumonia or Bright's disease.

As to a house especially associated with phthisis, and notes as to preventive treatment, see Dr. H. A. Arnold's letter.

No. 2. Bryn Mawr. There is a large "floating" population. It is a fashionable resort ten miles from Philadelphia. Elevation at railroad station 416 feet above the sea. The place may be said to be moderately cold and exposed. The prevailing winds are southerly in summer and from the north-west in winter. East winds disturb those subject to phthisis. There are no fogs. The air is cool and dry. The country is hilly. The soil is dry and of micaceous schist. East winds are the most troublesome to consumptive patients. There are sudden changes from heat to cold. There are Americans, Hiberno-Americans, and Irish. Consumption is rather rare. The report says that if any portions of the town are liable to the prevalence of phthisis it is the lower parts along the streams. Phthisis is hereditary in probably nine-tenths of the cases, and is generally chronic. The reporter, Dr. Sargent, believes that by cleanliness, fresh air, good food, daily exercise, cool sleeping apartments, cool bathing, and frictions, the disease may be prevented in children hereditarily predisposed, and that there may be contagion by neglect of the above measures. There is a slight amount of malaria. Rheumatism is moderately prevalent; so is pneumonia. Bright's disease is not prevalent.

No. 3. Perkiomen; population, 2,515. The town is partly exposed, partly sheltered. West winds prevail. The air is cool and dry, ex-

cept in valleys where there are streams; there it is foggy. Woods scanty. The soil is good; red shale. The people are engaged in farming. Consumption is chronic. Of the total deaths, about 16 per cent. occurred from phthisis and intercurrent pneumonia. Dr. Wolfe thinks that malaria acts as an exciting cause in those predisposed to phthisis. No prevalence of rheumatism, pneumonia or Bright's disease.

No. 4. Conshohocken; population, 5,000; elevation, 210 feet. Town is exposed and cold; fogs sometimes occur. There is not too much shade. The town is not subject to sudden changes. People work in factories. All nationalities represented. Phthisis not prevalent. Occurs most frequently among Irish. The disease is unquestionably promoted by heredity. The reporter, Dr. Stiles, has known the disease to occur in wives who have nursed sick husbands, no heredity or family history accounting for the disease, which proved fatal in wives after the death of husbands.

Malaria is prevalent, but bears no relation to phthisis. Rheumatism, pneumonia and Bright's disease are all prevalent.

NORTHAMPTON COUNTY.—Two replies. No. 1. Easton; population, 11,924 (1880). The principal part of the town is 190 feet above tide, a portion is from 290 to 300 feet above. The older part is sheltered, the newer part exposed. The wind during one year was from the north-west on 102 days; south-west, 150 days; north-east, 58 days; south-east, 23 days; north, 19 days; south, 5 days; east, 3 days. The atmosphere is warm. Fogs occur rarely. There is moderate shade in the streets. The rock is limestone. The older town is on diluvial soil—very rich. East and north-east winds troublesome to consumptives. The people are chiefly Americans; there are a few Irish, Jews and negroes. Consumption is comparatively rare, mostly hereditary. The Americans are more liable to it, and of these, stone-cutters. The disease is generally acute, sometimes chronic, usually hereditary. The reporter, Dr. Traill Green, has no evidence in favor of contagiousness. Rheumatism is prevalent; malaria, pneumonia and Bright's disease are not. General death-rate to 1,000, 16 +.

No. 2. South Bethlehem; population, 5,000; elevation, 400 feet. Sheltered. North and west winds prevail. The atmosphere is generally cool and dry. Fogs occur occasionally. The rainfall is stated to be about forty-four inches. There is sandstone overlying limestone. The drainage is by cess-pool. The soil is good. Easterly winds are most troublesome to consumptives. No great liability to sudden changes. The people are largely occupied in factories. Consumption is not marked. A certain portion of the town, on made ground near a brook acting as an open sewer, is thought to be associated with phthisis; but that can not be said of individual houses. The disease is usually acute. In one very marked case the patient was cured by going to Southern Colorado. Malaria is not especially prevalent; rheumatism is; pneumonia and Bright's disease are not.

SCHUYLKILL COUNTY.—Six replies. Five say that consumption is rare; one says it is not very prevalent. They usually speak of the liability of miners to the disease.

No. 1. Pottsville; population, 12,000; elevation, 614 feet. The town is sheltered by surrounding hills, The wind is usually south-west in clear weather. The air is cool and dry. There are no fogs. The country is hilly and dry, and woods are nearly destroyed. The soil is of medium or poor quality. East winds are troublesome to consumptives. The town is liable to sudden changes of temperature, and there is a decided difference between the temperature at noon and at night. The chief occupation is coal-mining. All nationalities are represented. Phthisis is hereditary in nine-tenths of the cases. Rheumatism is prevalent; malaria, pneumonia and Bright's disease are not.

No. 2. Mahanoy City; population, 10,000; elevation, 1,343 feet. The town is sheltered between two mountains, but is cold. At Mahanoy Plane the mean annual temperature for 1885 was 50.58°. The rainfall was 52.24 inches. Fogs occur occasionally. The soil is poor. Easterly winds are troublesome to consumptives. The town is especially liable to sudden changes of temperature. The people are largely miners of all nations. The disease is chronic, and cannot be averted except by change of climate. Malaria and Bright's disease are not prevalent; rheumatism and pneumonia are.

No. 3. St. Clair; population, 4,000; elevation, 752 feet. The town is exposed and cold. North-west winds prevail. The air is cool and dry; no fogs. No woods. The country is hilly, and the soil gravelly; good drainage. Mixed population. Phthisis is usually acute. The reporter does not believe it to be contagious. Rheumatism, pneumonia and Bright's disease are prevalent; malaria is not. (See Dr. Carr's report of hereditary cases, page 477.)

No. 4. Tremont; population, 3,000; elevation, 762 feet. The town is sheltered. North and west winds prevail. The air is cool and dry, and there are few fogs. Woods scarce. The country is hilly, and the soil gravelly of poor quality. North and north-west winds disturb consumptives the most. Changes of temperature at times marked; usually a heavy fall at night. Americans are the more liable to phthisis, the disease usually taking a chronic course. The reporter, Dr. J. W. Bird, cites two cases in which wives nursed consumptive husbands, and soon fell sick and died of the disease; also one case in which the husband, who had to nurse his wife, is now (March, 1886) sick, unable to work, and will eventually die of tuberculosis.

Malaria, rheumatism, pneumonia and Bright's disease are not prevalent.

No. 5. Schuylkill Haven; population, 3,300; elevation, 625 feet. The town is sheltered in part by mountains. North-west and south-east winds prevail. Mean annual rainfall, 1880 to 1885, 38.85 inches. Woods scarce. The soil is clay and red shale; of medium quality.

People employed in factories and shops. The people are of German and Irish origin. Phthisis is usually chronic. Rheumatism is prevalent; pneumonia and Bright's disease are not. Malaria prevailed for five years, owing to dredging a canal and dumping mud within the town. The intermittent character has given place to the remittent.

"Our town is on the left bank of the Schuylkill River, the greater part of it four miles below Pottsville. It lies in a valley running east and west, broken by hills, mountains bounding it north and south, about three miles apart. Soil principally red shale and clay; natural drainage good.

"Surface drainage of town good, but many cellars have water during wet months. The upper part is built on hill and inclined plane; the lower part is very level; simply enough inclination for surface water to run off by little artificial aid. Cellars often filled with water; sanitary condition of town otherwise very good. Malaria was unknown here till five or six years ago, when it appeared suddenly to a great extent. Schuylkill canal runs through the town. For many years past the canal was annually dredged, and deposit thrown within town limits. About a year ago malaria disappeared almost as suddenly as it came, the fevers changing to a remittent type instead of intermittent, and less under the control and power of cinchona alkaloids. During the last year new and extensive excavations have been made by the Pennsylvania railroad extension, which did not renew malaria. The lower part of town was the main locality affected during the five years. It had the fogs and prevailing winds somewhat modified by the consecutive mountain boundary south and east. Had scarcely any typhoid fever during the reign of malaria. No severe epidemics of any form in the five years since I have been here. Had diphtheria last spring in some families; many cases assumed the croupous form. If there is any disease prevailing more than other common diseases, it is naso-pharyngeal catarrh.

" Respectfully,

C. LEUKER."

No. 6. Pine Grove; population, 1,200; elevation, 520 feet. The town is exposed to north winds. South-west winds prevail. The air is said to be damp and foggy. The amount of rain is put at 42 inches, and there is a great deal of snow. The town is shady and cool in summer. The country is hilly, and the rock is slate. The soil is of medium quality. East winds are troublesome to consumptive patients. Sudden changes of temperature are frequent. Phthisis, in what few cases there are, takes a chronic course; it is always hereditary. Malaria and Bright's disease are not prevalent; pneumonia and rheumatism are.

SNYDER COUNTY.—Two replies. Shamokin Dam; population, 300; elevation, 800 feet. The town is exposed and cold. The prevalent winds are north and west. The atmosphere is cool and damp; fogs occur. There is a great deal of snow; not much shade. There are



sewers in the town. There are neighboring ponds and marshes. The soil is a sandy clay. The town is especially liable to sudden changes of temperature; there is a marked fall at night. The people are engaged in farming and lumbering; these are of American descent for several generations, and there are Germans. Consumption is very prevalent. In some families all die of it before the fortieth year. Three such families have but one representative remaining; the latter is forty years of age, and is dying of consumption. The offspring die between the twentieth and thirtieth year. The intermarriages prove that it is hereditary. A few of the family left years ago for Colorado, where they are stout and hearty.

The low and swampy areas and individual houses are associated with phthisis. These houses are damp. Consumption is prevalent among Americans, is usually acute, and is promoted by hereditary influences.

Malaria is prevalent, and consumption is especially prevalent in malarial districts. Rheumatism and pneumonia are also prevalent; Bright's disease is not.

No. 2. Freeburg; population, 700; elevation, 509 feet. Sheltered. North and west winds prevail. The air is cool and dry, at times warm; fogs at times. Shade in streets. Trees have been cut down around some houses. Ponds, marshes, hills and valleys. North winds troublesome to consumptives. People engaged in farming; of American descent and Germans. Not much consumption. Phthisis hereditary; infectious. Little malaria. Rheumatism, pneumonia and Bright's disease not prevalent.

SUSQUEHANNA COUNTY.—Three replies. No. 1. Susquehanna; population, 4,000; elevation, 914 feet. The town is sheltered. North, south and west winds prevail. The place is cold in winter and warm in summer. Few fogs. There is not much shade in the streets. The natural drainage is good. There is a loam of medium quality, with gravelly sub-soil. The town is built on side-hills. Southerly winds are the most troublesome to consumptives. There are sudden changes of temperature. The people are employed in factories and machine shops; about half are Americans, three-eighths Irish, and one-eighth Germans. Consumption can be said to be neither prevalent nor rare, and in nearly all cases is chronic, and in one-half the cases hereditary. No evidence of contagion. There is only a slight amount of malaria, and no prevalence of rheumatism, pneumonia or Bright's disease.

No. 2. Great Bend; population, 1,500; elevation, 884 feet. The town is cold. North and south winds prevail. The atmosphere is cool and damp. There is a medium amount of rain and snow. There is much shade from woods about the town, and there are hills and valleys. The soil is of medium quality. South winds are troublesome to consumptives. The town is liable to sudden atmospheric changes. The people are employed in farming and lumbering; they

are Americans, Germans, and Irish. There is a moderate amount of consumption, which assumes both an acute and a chronic form, and in three-fourths of the cases is hereditary. Malaria, rheumatism and pneumonia are prevalent; Bright's disease is not.

No. 3. Montrose; elevation, 1,053 feet. The town is exposed. West winds prevail. The air is cool and dry, and fogs are rare. There is a great deal of snow. There is not much shade from woods. The country is hilly, and the soil good. East winds are most troublesome to consumptive patients. Atmospheric changes marked. The people are engaged in farming and in factories. The people are chiefly of American descent. Phthisis is prevalent, particularly so among negroes. Neither pneumonia, malaria, nor Bright's disease prevails. Rheumatism is prevalent.

VENANGO COUNTY.—Six replies. Two from Oil City; population, 9,500; elevation, 1,008 feet on the flats; but the town is built on its seven hills. It is exposed and cold. North-west winds prevail. The air is cool, and fogs are occasional. There is a great deal of snow, and not much shade. There are many hills and valleys. The soil is very poor. North and north-west winds are troublesome to consumptives. There are sudden atmospheric changes, amounting at times to 40° in six hours or less. The people are attracted by the oil-wells from all sides. This reporter, Dr. McCulloch, says phthisis is rare, generally acute, and largely hereditary, perhaps altogether so. From an experience of thirty-eight years' practice, the doctor believes phthisis to be infectious. Malaria and Bright's disease are not prevalent; pneumonia and rheumatism are.

The second reply from Oil City says consumption is prevalent, and describes the place as sheltered by hills. Phthisis hereditary in 72 per cent. of cases. In other respects the two accounts harmonize. The reporter, Dr. F. F. Davis, adds that the winds are very variable, sometimes blowing from different directions two or three times in a day; in summer from the south-west, and in winter from the north-west. When an east wind has been blowing, or one from the south, and there is a sudden change to the north and a sudden fall of temperature, consumptives suffer. Americans suffer most; Jews never. A majority of the cases are hereditary. Consumption is as common in the hilly portion of the city as in the lower and more wet portion. (See Dr. Davis's letter, page 470 and 471.)

Three replies from Franklin; population, 6,000; elevation, 954 feet. The place is sheltered. Westerly winds prevail. The air is damp, changeable, and fogs occur. The mean rainfall (1875 to 1880) 40.9 inches. There is a medium amount of snow. Not much shade. There are hills and valleys. The soil is a sandy loam, with gravel, and is of medium quality. South-west and north-west winds are most troublesome to consumptives. There are decided atmospheric changes. The people are attracted by the oil-wells, and are of all nationalities. All

agree that consumption is rare. No especial house or race is associated with phthisis. Hereditary influence is noted as in nearly 100 per cent. of cases, and the disease is chronic. Some patients have been benefited by a sojourn in South Carolina, Florida, Colorado and California. The total death-rate from all causes is 11.7 in 1,000.

Dr. Stephen Bredin writes:

"In a practice of twenty-five years I have known several families afflicted with infectious consumption.

"The W. family. A son, aged about thirty-five, a worker in walnut-wood rails and staving, returned home after a hæmorrhage, and in the last stage of consumption. After his death, his sister in attendance took the disease, as did also two other members of the family, aged, respectively, about twenty-six, twenty-eight, and thirty. None of the large family non-resident took the disease. The house was well lighted, well warmed, not shaded. Circumstances above the average. The father robust. the mother spare in flesh, and nervous in temperament. the surroundings were a rich alluvial, well-cultivated soil, with a rather low, ill-drained meadow of forty acres or so in front. No consumption in or about the neighborhood until the arrival of the sick son.

"McK. family. Father stout, but afflicted with a *fiatula in ano* all his life. Mother large, raw-boned, healthy, but spare, a constant weaver by occupation all her life. House an old, badly kept, frame, fronting south on a low, alluvial but well-drained meadow. No shade, badly lighted, ventilated, and warmed. Two sons, robust men, engaged in the business of oil-well drilling, and thus much exposed, returned home and died of consumption. Three sisters and one brother, all adults and apparently well, carried off by consumption in succession.

"D. family. Father stout. Mother thin but healthy. House new frame, well-lighted and ventilated, poorly warmed. Close on the north and west side large, tall white-oak timber; soil, stiff clay, rich alluvium. Son afflicted with chronic diarrhœa, malarial probably; after recovery, declined and died of consumption in six months. Two sisters taken, and both died of a rapid consumption on the same day. Another taken afterward. By my advice, family removed into another county; no more deaths; has returned and occupied the same farm for a period of years with no more deaths. House better warmed, and timber entirely cut away.

"R. family. Husband had cough and extreme pallor; family history bad, having lost three or more relatives with consumption. Wife's family history good; spare in habit, with nervous temperament. Under my treatment for a long time for palpitation and hypertrophy of the heart, having been afflicted previous to marriage. Mother of five children, youngest, one year old, developed, after weaning this child, a quick consumption. Autopsy revealed extensively diseased lungs. The husband survived her one year, dying in New Mexico of consumption."

No. 5. Emlenton; population, 1,100; elevation, 850 feet. The town is sheltered; west winds prevail; the air is damp and fogs occur frequently. There are woods about the town, but not much shade in the streets. The country is hilly and the soil is poor. There are sudden changes of temperature. The people are occupied in farming and mining for oil. They are largely of American descent. Consumption is prevalent and chronic; hereditary in one-half the cases. Malaria is becoming prevalent; rheumatism and pneumonia prevail; Bright's disease does not.

Dr. J. E. Hall writes that the town is situated in a narrow valley and on a side-hill on the east bank of the Allegheny River, 89 miles above Pittsburgh. The town is sheltered from west winds by a hill covered with hemlock on the west bank of the river. Acute phthisis is rarely seen. The doctor thinks that the gas from the oil-wells is injurious to persons in whom consumption is well marked, but is perhaps beneficial in the early stages; also in bronchitis. However, the gas is not considered an especially valuable therapeutic agent.

#### Group III.

BLAIR COUNTY.—One reply. Hollidaysburg; population, 5,000; elevation, 953 feet. Sheltered. West winds prevail. The air is cool and dry. Fogs are infrequent. There is a medium amount of snow. There is shade in the streets. Soil good. North-east winds troublesome to consumptives. The people are engaged in factories and in mining, and of various nationalities. Phthisis not prevalent, but is more frequent among Americans and negroes; hereditary and chronic malaria not prevalent nor associated with phthisis. Rheumatism and pneumonia prevail in winter and spring. Bright's disease not prevalent.

The town is situated on a hill-side. Rock, limestone. There are several sewers. No ponds or marshes. Meadows are dry. The town is surrounded, at a distance of one to ten miles, by an "amphitheatre of mountains."

CLEARFIELD COUNTY.—Four replies. Two from Clearfield; population, 3,000; elevation, 1,103 feet. The town is exposed and cold, though sheltered on east and west. Fogs occur frequently in the autumn. The site of the town is nearly level, having been at one time a swamp. The streets are shaded, so as to make the air rather cool and damp. The soil is of medium quality. There is an alluvial deposit ten to fifteen feet deep. At the bottom is a substratum of gravel; rock below and sand above. East winds are very troublesome to consumptives. There are sudden changes of temperature. The difference between noon and night is often very marked. The mid-winter temperature is steadily low. The people are engaged in agriculture and lumbering; they are of American descent chiefly. There are some Irish and Germans. Consumption pronounced by one observer to be rare and chronic, and by the other to be prevalent and acute. Both acknowledge heredity. The

cases are largely among Americans, except in stone-cutters' consumption, where race does not protect. Dr. Hartswick believes that consumption is infectious, having met with a number of instances where the husband, wife, sister, or nurse has apparently contracted the disease after long and constant watching at the bedside. No malaria; rheumatism, pneumonia and Bright's disease prevail.

No. 3. Houtzdale; population, 2,500; elevation 1,800 feet. The town is exposed and cold, situated on a hill-side. North and west winds prevail. The air is cool and dry; there are occasional fogs. There is not much shade. The soil is a loam and clay, of medium quality. North and east winds are troublesome to consumptives. There are great changes of temperature. The people are engaged in mining and in lumbering. They are Americans, German and Irish. Phthisis is said to be comparatively frequent, and is both acute and chronic. Patients have been cured by going south. Dr. Todd furnishes the following history of a case of tuberculosis of left lung: "In 1880 I went to southern Texas and gained twenty-five pounds in weight. One year since, after an attack of typhoid fever and pneumonia, I weighed but one hundred and forty-five pounds, a loss of fifty pounds. I now weigh two hundred pounds, and am free from cough, night-sweats, and other indications of phthisis. Relief due, I am confident, to change of climate, use of cod-liver oil with hypophosphites and whisky. Last winter I spent several weeks in St. Augustine, Fla." The majority of cases are hereditary. There is some malaria, but it does not appear to have any relation to consumption. Rheumatism and pneumonia prevail. Bright's disease does not, although there are some cases.

No. 4. Curwinsville; population, 1,300; elevation, 1,141 feet. The town is very much sheltered by hills. The prevailing winds are north-west and east. Atmosphere cool, often damp; not much fog. There are woods near the town and abundant shade in the streets. The soil is poor, sandy, gravelly and slaty; there is a clay subsoil. Drainage excellent. There are no ponds, bogs or meadows. Very little marsh land. Hills. East winds trouble consumptives. Changes of from 40° to 50° occur in twenty-four hours, and a marked fall at night. The people are of American descent, engaged in farming and in lumbering. There are some coal-mines and a few factories. Consumption is said to be very prevalent and hereditary. A family is instanced, living ten miles from Curwinsville, dwelling near the river in a very sheltered spot, where the sun shines but a few hours each day. The atmosphere is very damp and foggy. Four or five members of the family have died there, and more are likely to die, of phthisis. The disease is as frequently acute as chronic. There is little success in preventing consumption. No malaria. Very little Bright's disease; some pneumonia; more rheumatism.

CLINTON COUNTY.—No reply.

**INDIANA COUNTY.**—One reply. Indiana; population, 3,000; elevation, 1,300 feet. The town is exposed on elevated ground. There are low hills on the west, north and east. Temperature averages in July, 78°. In January, 32°. West winds prevail. Atmosphere changeable; dry. No fogs. Snow seldom lies long on ground. Not much shade. Soil, loam and slate, with clay. Rock, micaceous sandstone. Few ponds or marshes. East winds most troublesome. Sometimes severe changes in temperature. Farming is the chief occupation. Some lumbering and mining. Population mixed. "Consumption is becoming prevalent;" it is acute and chronic. Some cases have been cured by moving to the west and north-west. Hereditary in nine-tenths of the cases. The reporter, Dr. W. Anderson, is satisfied that consumption is contagious or infectious. No malaria. Rheumatism prevalent. Pneumonia prevalent in winter and spring. Bright's disease occasional.

**LUZERNE COUNTY.**—Two replies. No. 1. Wilkes-Barre; population, 35,000; elevation, 480 feet. The city is in a long valley sheltered by mountains rising 1,200 feet above the valley. The city is hot in summer, cold and variable in winter. The winds are westerly and south-westerly. The air is often damp and foggy. The rainfall averages 42 inches. Heavy snow-storms. There is shade from woods outside the town and in the streets. The soil is medium, alluvial, covering the carboniferous shales, slate and clay. There are sewers. Few marshes or ponds. Hills. North and north-east winds are troublesome to consumptives. There are sudden atmospheric changes. The nights in hot weather are cool, even chilly. The occupation of the people is chiefly mining for coal. Phthisis is not very prevalent. There are individual houses where the disease has been frequent, but there has also been an hereditary influence. Such houses have usually had damp cellars or have been in the vicinity of standing water. In an extensive practice, Dr. Mayer has never seen an instance where nurse, husband or wife, mother or sister, contracted the disease during or shortly after its occurrence, progress or ending. Malaria is prevalent. Mr. Mayer thinks that the congestions of malarial disease are probably frequent factors in developing phthisis in those who inherit a tendency to it, and he has frequently seen this occur. He has no evidence that malarial troubles are antagonistic to pulmonary consumption. Bright's disease is prevalent; so also is rheumatism. Cyclic albuminuria due to malaria is frequently observed.

Dr. Mayer adds:

"Nationality: About 40 per cent. American descent; 30, Irish and Welsh, with some English; 20, Germans; 2, negroes; 4, Jews, and 4, Poles and Huns.

"Consumption very rare among the Jews. Have only known of three deaths from it in twenty-five years among that race, and two of these were in the same family. It is very common among negro hy-

brids, particularly quadroons or octaroons. It is also most common among the native-born children of Irish and Welsh parents, who work in the mines or chutes, and in those of several generations of American descent; among young women working in dry-goods stores, and those in factories handling cotton and woolen goods.

"I have known of at least ten cases of incipient phthisis apparently cured by going from this district. A minority, say one-third of these, by going to Florida, Texas, Southern Georgia, etc; two-thirds by the change to the climate of Minnesota or that of the region about Denver I never knew of a patient benefited by coming here from another locality.

"In spite of the repeated urgings of our doctors, our stupid town authorities have never given us a board of health, and in most of our cemeteries a doctor's certificate is not required before burial. I can find in the offices of the different cemeteries here no reliable records of the causes of death."

No. 2. Kingston; population, 1,600; elevation, 600 feet. The town is exposed. Westerly winds prevail in winter. Fogs occur. The soil is alluvial and very rich. Mining is the chief occupation, and all nationalities are represented. Phthisis is rare among the native Americans; common among the Irish miners. Hereditary influence is recognized, and miners suffer; the disease is both acute and chronic. Patients have been cured by going to California. The reporter, Dr. Corss, thinks the disease is infectious. Malaria is prevalent, but seems to have nothing to do with phthisis.

Dr. Corss says:

"The dust from anthracite coal is fine and impalpable, hanging in a black cloud over every breaker. It induces a form of consumption in which asthma is a prominent symptom. The miners who cut the rock tunnels suffer from a disease known among them as rock-miners' consumption; of this the prominent symptom is a shortness of breath, not generally asthmatic, but more like miliary tuberculosis. Rock-mining is considered more dangerous than coal mining."

LYCOMING COUNTY.—One reply. Williamsport; population, 28,000; elevation, 700 feet. Sheltered. West and north-west winds prevail. The air is cool; there are no fogs. There is not much shade outside the town, but in the streets, and trees have been cut down for health. The soil is alluvial clay. There are meadows, marshes and hills. The soil is rich on the low ground, poorer on the hills. East and north-east winds are troublesome to consumptives. There are marked atmospheric changes. The people are engaged in factories and in lumbering. Five per cent. are of German birth, 2 per cent. Irish, 1 per cent. Jews, 7 per cent. negroes. Consumption is prevalent. The reporter, Dr. Hill, has known whole families to die of consumption, but they have not all lived in one house. Hereditary tendency has extended to the third generation, though a majority of cases furnish no

history of ancestral phthisis. Americans and negroes are particularly liable, and one-half the cases terminate in six months. Dr. Hill believes patients may be cured by removal to high table-lands and pine forests; also, in contagion. There is a good deal of chronic malaria. Phthisis is not prevalent in malarial districts. Rheumatism, pneumonia, and particularly disturbances of all mucous membranes, are prevalent. Bright's disease does not prevail.

**NORTHUMBERLAND COUNTY.**—No reply.

**PERRY COUNTY.**—Two replies. No. 1. Newport; population, 2,500; elevation, 400 feet. The town is sheltered and warm. West winds prevail. Fogs occur. Not much shade. There are neighboring meadows, marshes and hills. The soil is of medium quality and alluvial. East winds are troublesome to consumptives. Sudden changes of temperature are not frequent. People engaged in factories and in trade, and are of American descent. There is a moderate amount of phthisis, chiefly chronic and hereditary. Malaria is not especially prevalent, but seems to be an exciting cause of phthisis in those predisposed to it. Rheumatism, pneumonia and Bright's disease are not prevalent.

No. 2. Landisburg; population, 400; elevation, 740 feet. Exposed. West winds prevail; air cool; fogs occur. Not much shade. Hills and valleys; poor soil. Southerly winds troublesome to consumptives. Liability to sudden atmospheric changes. People engaged in farming and of American descent. Phthisis rather rare; usually acute. Rheumatism prevalent; pneumonia to a moderate extent. Bright's disease not prevalent.

**SOMERSET COUNTY.**—No reply.

**TIOGA COUNTY.**—Five replies. All pronounce consumption rare. The report from Arnot, a town of 4,600 inhabitants and at an elevation of 1,700 feet, says: "No resident ever had it here." In Arnot north and south winds prevail. The atmosphere is dry; fogs do not occur. There is a medium amount of snow; not much shade. There are ponds and meadows, hills and valleys. The chief occupations are coal mining and lumbering. The people are of American descent. Germans, Irish, Poles and Hungarians. There is some malaria; pneumonia and Bright's disease are not prevalent, but rheumatism is frequent from reckless exposure. The reporter, Dr. D. C. Matins, writes: "I have known many persons apparently in a decline cured entirely by inhaling the dust of these mines with the smoke from kerosene lamps and burning powder, and drinking the water impregnated with sulphates." The doctor speaks of the frequency of miners' asthma and, from an experience of over two hundred autopsies, of the occurrence of "healed cavities."

No. 2. Wellsboro'; population, 3,500; elevation, 1,300 feet. The town is sheltered. West and north-west winds prevail. Air cool; fogs rare. Streets shaded. Soil good. Sudden atmospheric changes. People of American descent and Germans. Phthisis chronic and more



prevalent among negroes; usually hereditary. Rheumatism is prevalent; no malaria or Bright's disease; some pneumonia.

No. 3. Blossburg; population, 2,800; elevation, 1,348 feet. Sheltered. North and south winds prevail; air cool; no fogs. Surrounding hills wooded. The soil is a clayey loam of medium quality. No great atmospheric changes. Phthisis hereditary. Two houses (the best in town) have had several cases of phthisis; three wives and two daughters of Americans in two years past have been under reporter's care. The disease is chronic and hereditary. Malaria not prevalent. Rheumatism and pneumonia are not uncommon.

No. 4. Osceola; population, 800; elevation, 768 feet. Sheltered by hills on the north and south. West and east winds prevail. Rain and snow medium; little woods. There are meadows and valleys. The soil is very rich. South and east winds trouble consumptives. No great changes of temperature. The people are engaged in farming and are of American descent. Phthisis is chronic and in 80 per cent. is hereditary. The reporter, Dr. Humphrey, thinks he has evidence in support of infection. Malaria and Bright's disease are not prevalent. Rheumatism and pneumonia are.

No. 5. Cherry Flats; population (village), 110; sheltered. West winds prevail. Air is cool and dry. Not much shade. Meadows, hills and valleys. Soil good; red shale. South winds troublesome to consumptives. There are sudden changes of temperature. Chief occupations are farming and lumbering. People of American descent and Welsh. Phthisis chronic; hereditary in two thirds of cases. Infectious in rare cases. Little malaria. Rheumatism and pneumonia are prevalent. Bright's disease is not.

Dr. H. G. Martin reports a patient with incipient phthisis cured by going to Colorado, where he has lived twenty years. On three occasions he has returned home, but at these times cough recurs. In thirty years' practice, and twenty-five of that an extensive practice, "I have treated but ten or eleven cases; one of them was of twenty years' standing when I first saw the case, and the patient lived nineteen years. One other case ran for fifteen years. I have a case at present of four years' standing, and the patient may die of old age. She is Irish; the rest have all been Americans."

WARREN COUNTY.—Two replies. Irwin; population, 2,000; elevation, 800 feet. The town is exposed and cold. North-west winds prevail. The air is cool and dry. Small amount of snow. There is not much shade outside the town, but some in the streets. There is a liability to sudden atmospheric changes. The people are largely foreign of every nationality. Phthisis is only moderately prevalent. In two houses there have been six cases; all hereditary; one case acute. It is prevalent among Americans and is mostly chronic. The reporter, Dr. Humphrey, does not believe that the disease can be prevented in children hereditarily predisposed. He says he has known cats become

tubercular from eating sputum. Malaria is not prevalent; pneumonia moderately so. Bright's disease rare. Rheumatism prevalent.

No. 2. Sheffield; population, 1,500; elevation, 1,100 feet. Sheltered and warm. West winds prevail. Air cool and damp; fogs occur. Medium amount of snow and rain. There are ponds and marshes, hills and valleys. Soil good. North winds troublesome to consumptives. The people are engaged in factories and in lumbering. They are of American descent, German, Irish and Swedes. Consumption is prevalent; Americans chiefly affected; usually chronic; three-fourths of cases hereditary. Some malaria. Rheumatism, pneumonia and Bright's disease are prevalent.

WAYNE COUNTY.—One reply. Honesdale; population, 7,000 (1880); elevation, 1,000 feet. In the county it ranges from 714 to 2,040 feet. Surface very irregular. There are hills and valleys; lakes and ponds numbering 76. Town exposed north-west and south; sheltered east and west. North-west winds prevail. Air cool and dry; at times damp. Fogs occur. Average rainfall for last five years, 38 inches. Average snowfall, 73 inches. In 1857-58, snowfall, 27 inches; in 1867-68, 115 inches. Storms come with north-east, east and south east winds. Trees about the town; have cut trees in streets. Soil good to medium; red shale. Liability to sudden atmospheric changes; sometimes a fall of fifty degrees between noon and night. People engaged in farming and lumbering; of American descent, German and Irish. Phthisis rare in town, prevalent in country. Individual houses damp, associated with phthisis. The disease is acute; hereditary influence marked. Malaria prevalent in town, and consumption especially so in malarial districts. Rheumatism, pneumonia and Bright's disease are prevalent in the county, but not in town.

WESTMOBELAND COUNTY.—Three replies. No. 1. Ligonier; population, 700; elevation, 1,250 feet. Average general mortality, 18 in 1,000; from consumption, for thirteen years, one in 16.48 of total mortality.

Loughlinstown; population, 192. Deaths from phthisis 4.03 of total mortality.

Stonerville; population, 400; elevation, 750 feet. The town is sheltered, located in a flat. The air is cool and dry. Fogs seldom occur. The soil is clay over limestone. There are hills, valleys and meadows; no sewers, ponds, bays or marshes. The soil is very rich. East or south-east winds are troublesome to consumptives. There are sudden atmospheric changes, and there is a moderate fall of temperature at night. The people are farmers and miners, and are American, German and Irish. Consumption is rare; hereditary in 80 per cent. and chronic. Americans of Irish and German descent have suffered the most. Miners are particularly affected.

Dr. Rigg, in the case of a lady patient, when there was little or no improvement in Stonerville, sent her to New Mexico, to a warm loca-

tion, 2,500 feet high. After staying one year, she came back seemingly cured. At the end of six months the old trouble returned. She was then sent to Somerset county, Pa., to an altitude of nearly 2,500 feet. She has been there eighteen months, and seems to be perfectly well.

Pneumonia and Bright's disease are prevalent. No prevalence of rheumatism.

No. 3. West Newton; population, 2,500; elevation, 782 feet. Town sheltered. South, east and west winds prevail. Air dry; fogs do not occur often. Not much shade. Hills and valleys. Soil medium and good. Northern winds troublesome to consumptives. There is a liability to changes of temperature. The people are engaged in factories and in mining. They are of American descent, German and Irish. Consumption is rare and of chronic form and hereditary. The reporter, Dr. Robinson, thinks he has evidence in favor of infection. Malaria and Bright's disease not prevalent. Rheumatism and pneumonia moderately so.

YORK COUNTY.—Six replies. One says consumption is rare and four say that it is prevalent. Dr. J. C. Gable and Dr. A. A. Long, of York, report: Population, 20,000; elevation, 450 feet. Sheltered. West winds prevail. Air damp and variable. Fogs occur. Streets well shaded, but no trees. Soil very rich. South and east winds troublesome to consumptives. Liability to changes of temperature. The people are engaged in farming and in factories; they are Americans, chiefly of German descent. Dr. Gable states that the damp portions of the town are associated with phthisis. All houses more or less damp. Americans and negroes liable to phthisis; the latter is generally chronic, and in three-fourths of cases hereditary. Malaria is prevalent, and consumption is prevalent in malarial localities. Rheumatism, pneumonia and Bright's disease are more or less prevalent.

Dr. Gable relates the case of Mr. W. H. K., who died of phthisis after an illness of two years and a half. His wife, of healthy stock, was his constant attendant, and lived in the same room with him. Before his death she showed prodromes of phthisis and died one year after the husband.

No. 3. Hanover; population, 3,000; elevation, 600 feet. West winds prevail. Air cool and dry. Fogs rare. Rainfall has been thirty-eight inches. Not much shade. Meadows and valleys. Good soil; limestone. East winds troublesome to consumptives. No liability to sudden atmospheric changes. People engaged in farming and in cigar factories; of American descent. Phthisis frequent in American "well-to-do" families. The disease is chronic and nearly always hereditary. Reporter does not believe in infection. Malaria and rheumatism not prevalent. Pneumonia prevails and Bright's disease is increasing.

No. 4. Wrightsville; population, 2,000; elevation, 300 feet. Ex-

posed to both heat and cold. North-west winds prevail. Atmosphere generally cool; fogs frequent. Little shade. Limestone. Hills north and south. Ponds and marshes north. River east; creek south. Soil very rich. Liability to great atmospheric changes. People engaged in cigar factories, quarries, lime-kilns, saw-mills, etc. American-born outnumber negroes, Irish and Germans. Houses near water more closely identified with phthisis. The proximity to water believed to induce consumption. The houses associated with phthisis are damp and cold. Phthisis more frequent among the poor; it is acute and chronic and generally hereditary. The reporter, Dr. Rebman, thinks he has seen children hereditarily predisposed saved from phthisis by protection from cold and wet, etc. Consumption is more prevalent in miasmatic districts. Rheumatism and pneumonia prevalent; Bright's disease especially so.

No. 5. Dillsburg; population, 500; elevation, 1,065 feet. Sheltered. North and west winds prevail. Shade in the streets. No liability to sudden atmospheric changes. People engaged in farming and mining; of American descent. Consumption rare. There is a central portion of the town having damp cellars and yards where consumption is frequent. These localities not influenced by heredity. Phthisis chronic; not at all hereditary. The reporter believes that consumption can be prevented from occurring in children hereditarily predisposed by removal from family influences and "plenty of good whisky." He also believes that phthisis is infectious. No malaria. Rheumatism, pneumonia and Bright's disease not prevalent.

No. 6. Hallam. In a limestone valley, ranging from one to two miles wide, extending west from the Susquehanna. A range of low hills of slate and limestone and flint, north and south, near Wrightsville. Springs and running streams numerous. Through the valley and on the north side of the valley consumption is seldom seen; but on the south side it is frequent. Reporter cannot explain why.

In summer the air is warm and often damp and foggy; in winter, cold and dry. Timber covers about one-sixth of area. Consumption frequent, chronic and hereditary. There is a good deal of malaria; no relation to consumption. Rheumatism and Bright's disease are not frequent. Pneumonia is prevalent.

#### Group IV.

CLARION COUNTY.—One reply. No. 1. Clarion; elevation, 1,947 feet. The town is exposed. In spring and fall there is foggy and wet weather. Liability to sudden atmospheric changes. West winds prevail. Rainfall, forty-two inches in 1885. Not much shade. There are meadows, marshes, hills and valleys. Soil medium. West and north-west winds troublesome to consumptives. The people are engaged in farming, mining and lumbering. The people are Americans, Germans, Irish and Jews. Consumption moderately prevalent; increasing each

year; occurs in Americans and negroes; usually chronic. Patients have been cured by removal to San Antonio, Texas. No true malaria. Pneumonia occurs in spring and autumn. Bright's disease not prevalent.

ELK COUNTY.—Two replies. No. 1. Ridgway; population, 2,000; elevation, 1,437 feet. Town sheltered, but cold. West and north-west winds prevail. The air is cool and damp. Fogs occur. There is shade from woods about the town. There are meadows, hills and valleys. Soil of medium quality. West and north-west winds troublesome to consumptives. There is a liability to sudden changes of temperature; great fall of temperature at night in warm weather. People engaged in lumbering; of American descent, German and Irish and Swedes. Consumption of "medium" frequency. Nearly all the pulmonary disease has been in the vicinity of a tannery on the north side of the town, near the Elk Creek, inhabited chiefly by Swedes. Disease chronic; apparently hereditary in twenty per cent. of cases. No prevalence of malaria; no relation of this to consumption. Rheumatism and pneumonia prevalent. A few cases of Bright's disease.

No. 2. Dagus Mines; population (within radius of one mile), 3,000; elevation, 2,000 feet. The town is sheltered and cold. West and north winds prevail. Air cool, damp. Occasional fogs. Not much shade. Meadows, marshes, hills and valleys. One marsh north-west of town a mile and a half long, a quarter to a half mile wide. Snow in winter two to four feet deep on level, and lasts five to six months. In 1884-85 lasted six months less three days. Temperature in winter usually from  $+10^{\circ}$  to  $-20^{\circ}$  F. In summer it reaches  $85^{\circ}$ , but usually about  $75^{\circ}$ . Sudden changes. Soil poor. People chiefly of foreign birth; few Americans. Consumption very rare; acute and chronic. Malaria or Bright's disease not prevalent. Rheumatism, pneumonia and bronchitis frequent.

McKEAN COUNTY.—One reply. Smethport; population, 1,500; elevation, 1,500 feet. The town is in a valley. North-east and south-west winds prevail. The air is variable. There are fogs. Medium amount of snow and rain. There are ponds and meadows. The soil is of medium quality. North-east winds are troublesome to consumptives. There are sudden changes of temperature. People engaged in farming, lumbering, and in factories; American and Irish. Consumption is rare, chronic, and always traceable to syphilis; it is amenable to specific treatment. Malaria not prevalent, and not associated with phthisis. Rheumatism prevails among the low Irish. Pneumonia is moderately prevalent. Bright's disease is occasional.



Table II.

*Mortality from consumption, pneumonia, and malarial fever. General death-rate and density of population in Pennsylvania, by counties, based on the census reports for 1888. Prepared by Guy H. Dale, M. D.*

	Consumption.	Pneumonia.	Malarial fever.	Occupation.	No. of persons to sq. mile.	Area in square miles.	Population, 1880.	Total death-rate per 1,000.	Persons living to one death from pneumonia.
Adams,	60	26	5	Ag.	62	530	32,455	15.1	
Allegheny,	563	369	18	Min.	469	760	355,809	16.5	
Armstrong,	81	24		Ag.	79	610	47,641	9.7	
Beaver,	64	22	2	Min.	88	450	39,605	12.9	
Bedford,	49	29	5		35	1,000	34,929	12.3	
Berks,	269	128	11	Ag.	125	900	112,597	15.4	
Blair,	67	56	3		104	510	52,740	11.7	
Bradford,	88	77	8	Ag.	50	1,160	58,541	13.4	
Bucks,	162	55	6	Ag.	116	590	68,676	14.2	
Butler,	82	48	2		65	820	52,536	11.6	
Cambria,	75	55			70	670	46,811	15.4	
Carbon,	46	27	2	Min.	80	400	31,923	12.5	
Centre,	62	38	1		31	1,230	37,912	11.8	
Chester,	189	110	11	Ag.	110	760	83,481	14.0	
Clarion,	38	26	2		71	570	40,328	10.7	
Clearfield,	49	44	3	Ag.	39	1,130	43,308	13.0	
Clinton,	30	22	7		30	860	26,178	11.7	
Columbia,	47	46	11		67	480	32,409	15.3	
Crawford,	106	53	3		68	1,000	68,607	11.3	
Cumberland,	84	58	14	Ag.	83	550	45,977	13.8	
Dauphin,	110	121	20		147	520	76,148	15.6	
Delaware,	109	43	4		300	190	50,101	12.2	
Elk,	10	10		Lm.	18	770	12,800	8.0	
Erie,	131	88	4		71	770	54,688	12.9	
Fayette,	83	49	3	Ag.	71	830	58,842	13.1	
Franklin,	114	56	8		66	760	49,855	16.1	
Fulton,	25	14			23	440	10,149	13.5	
Greene,	50	16	2		46	620	28,273	10.6	
Huntingdon,	57	29	4		28	900	33,954	14.1	
Indiana,	47	21	1		49	830	40,527	10.4	
Jefferson,	47	14	1		44	640	27,935	14.1	
Juniata,	29	32	6	Ag.	46	400	18,227	14.0	
Lackawanna,	128	93	6	Min.	200	440	89,269	10.3	
Lancaster,	240	102	8	Ag.	144	970	139,447	12.6	
Lawrence,	49	29	4		90	370	33,312	9.6	
Lebanon,	66	24	3	Ag.	110	350	38,476	13.0	
Lehigh,	137	48	4		183	360	65,969	14.0	
Luzerne,	150	183	24	Ag.	145	910	133,065	15.1	
Lycoming,	76	66	5		48	1,205	57,486	13.1	
McKean,	32	26	9	Lm.	42	1,000	42,565	10.8	
Mercer,	84	87	12		85	660	56,161	11.7	
Mifflin,	54	18	3		52	380	19,577	16.0	
Monroe,	27	13	1	Ag.	33	600	20,175	13.1	
Montgomery,	191	86	8	Ag.	201	480	96,494	15.0	
Montour,	13	22	12		110	140	15,468	12.2	
Northampton,	114	84	8		185	380	70,312	13.5	
Northumberland,	70	61	18		115	460	53,123	14.0	
Perry,	36	24	13		58	480	27,522	12.3	
Philadelphia,	2,677	957	61	Mis.	6,567	129	847,170	20.4	
Pike,				Lm.	16	600	9,663		
Potter,	12	13		Lm.	13	1,070	13,797	15.0	
Schuylkill,	183	126	4		155	840	129,974	15.0	
Somerset,	36	12			30	1,100	33,110	17.4	
Snyder,	30	40	3		55	320	17,797	18.6	
Sullivan,				Lm.	19	430	8,073		
Susquehanna,	65	49	3		49	830	40,354	13.8	

30, . . .	92
. . . . .	.734
. . . . .	28,903
. . . . .	356
. . . . .	56,842
. . . . .	343
. . . . .	49,207
. . . . .	357
. . . . .	89

	Unknown.	20th Ward.
3	196	84
10	192	27
9	147	92
9	159	109
9	146	104
2	153	119
1	118	133
5	128	130
4	87	130
2	170	165
2	124	184
4	146	130
9	171	109
9	133	140
5	148	119
8	202	131
9	152	97
6	121	108
1	135	106
7	109	121
9	101	117
7	135	142
6	112	139
8	70	115
9	137	157
9		

sumption. 116 56 90 92 20 57 80 43 46 26 85 30 33 34 33 18 89





Table II—Continued.

*Mortality from consumption, pneumonia, malarial fever.*

	Consumption.	Pneumonia.	Malarial fever.	Occupation.	No. of persons to sq. mile.	Area in square miles.	Population, 1880.	Total death-rate per 1,000.	Persons living to one death from consumption.
Tioga, . . . . .	50	50	2	Ag.	41	1,120	45,814	12.2	916
Union, . . . . .	16	5	.	.	55	310	16,905	7.6	1,056
Venango, . . . . .	74	37	5	.	66	660	43,670	12.0	590
Warren, . . . . .	31	18	5	.	31	910	27,981	10.6	902
Washington, . . . . .	132	45	2	Ag.	61	800	55,418	13.8	420
Wayne, . . . . .	35	26	5	.	45	740	33,513	12.8	957
Westmoreland, . . . . .	94	60	3	.	75	1,040	78,036	12.3	830
Wyoming, . . . . .	31	20	1	.	39	400	15,598	14.4	503
York, . . . . .	97	63	7	Ag.	82	920	87,841	10.7	905
Remainder, . . . . .	15	18	.	.	.	.	22,895	10.0	1,526
Remainder, . . . . .	1	4	.	.	.	.	4,385	7.0	4,385
State, . . . . .	8,069	4,208	207	.	.	45,215	4,282,891	14.9	530
CITIES, . . . . .									
Pittsburgh, . . . . .	293	197	6	.	.	.	156,389	21.0	533
Allegheny, . . . . .	88	58	7	.	.	.	78,682	11.2	894
Erie, . . . . .	64	47	7	.	.	.	27,730	17.6	433
Scranton, . . . . .	56	42	1	.	.	.	45,850	9.6	818
Reading, . . . . .	111	33	6	.	.	.	43,278	15.8	389

Table IV.

Philadelphia—1861-'73:

Total mortality, . . . . .	201,221
Consumption, . . . . .	26,864

Per cent, . . . . .	13.35
Consumption, . . . . .	Per cent.
1807-'26, . . . . .	15.04
1826-'46, . . . . .	14.48
1847-'60, . . . . .	13.26
1861-'73, . . . . .	13.35
1874-'83, . . . . .	14.86
1807-'73, . . . . .	14.17
Pittsburgh, 1875-'85, . . . . .	9.2
Scranton, 1885, . . . . .	7.33

Table V.

1873.				1881.			
WARD.	Persons living to one death from any cause.	WARD.	Persons living to one death from any cause.	WARD.	Persons living to one death from any cause.	WARD.	Persons living to one death from any cause.
9	72.30	7	43.52	22	60	8	44
23	65.68	17	43.38	12	59	16	42
13	63.55	28	43.20	23	57	25	41
14	61.03	25	42.26	21	57	19	40
16	59.00	5	42.19	14	55	28	40
10	55.90	3	42.17	9	55	17	40
8	55.57	26	42.12	10	55	11	40
22	54.20	18	40.43	15	55	1	39
6	53.61	24	39.51	13	54	3	37
21	52.30	1	37.47	30	50	27	37
12	51.60	4	36.32	20	49	7	37
15	50.79	19	31.35	6	48	18	36
20	48.99	...	...	24	47	2	35
27	48.70	...	...	29	46	5	32
2	46.42	...	...	26	44	4	31
11	44.71	...	...	31	44	...	...

1873. One death from consumption in every 318 of the population. Deaths from consumption in each month, arranged in the order of their mortality :

March, . . . . .	258	July, . . . . .	195	April, . . . . .	176
February, . . . . .	243	May, . . . . .	185	September, . . . . .	150
January, . . . . .	227	November, . . . . .	184	August, . . . . .	142
October, . . . . .	220	June, . . . . .	181	December, . . . . .	132

Table VI.

*Consolidated Abstract of Deaths in Pittsburgh, from Consumption, for the eleven years ending 1885.*

POPULATION.	NATIVITY.								AGE.										TOTAL BY SEXES.		Total, both sexes.	Deaths from all causes.
	UNITED STATES.				For- eign.																	
	White.		Black.																			
Male.	Female.	Male.	Female.	Male.	Female.	Under 5 years.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Males.	Females.						
1873	76	77	14	8	69	72	18	27	106	66	41	35	16	6	1	159	157	316	2,957			
1876	66	65	45	9	12	94	37	55	93	63	44	30	35	5	..	171	154	325	2,896			
1877	53	95	9	9	79	30	..	..	84	80	45	23	16	9	..	141	154	295	3,406			
1878	72	88	6	12	71	60	..	..	99	80	51	30	16	1	..	149	160	309	3,66			
1879	60	71	3	6	66	47	..	..	81	65	37	23	16	5	1	129	124	253	2,923			
1880	68	97	8	7	76	80	..	..	97	81	41	31	20	2	..	150	164	314	3,410			
1881	86	96	8	5	89	62	..	..	106	87	65	29	26	5	..	183	163	346	4,486			
1882	67	77	12	12	85	60	1	26	90	78	57	37	20	4	..	164	149	313	4,090			
1883	78	77	16	15	90	63	1	80	101	94	48	43	19	2	..	181	157	338	3,318			
1884	83	76	15	10	92	58	..	..	110	84	65	34	21	2	..	199	154	353	3,733			
1885	82	91	19	13	103	70	1	36	128	96	57	37	21	4	..	206	174	380	3,840			
Total,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,832	1,710	3,542	38,156			

Deaths from consumption to total deaths, eleven years, 9.2 per cent.  
Persons living in 1880 to one death from consumption, 497.

Pittsburgh, 1873-1879 :

April, . . . . .	225	February, . . . . .	191	July, . . . . .	169
May, . . . . .	217	June, . . . . .	186	October, . . . . .	166
March, . . . . .	216	August, . . . . .	173	November, . . . . .	162
January, . . . . .	198	December, . . . . .	171	September, . . . . .	146

Table VII.

*Relative Purity of Water Supply in Philadelphia. Furnished by John L. Ogden, Esq., Chief Engineer.*

SOURCE OF SUPPLY.	Pumping Stations.	Reservoirs.	Wards supplied.	Order of excellence.*
Schuylkill River,.....	Fairmount, ... Spring Garden & Fairmount.	Fairmount,.... Corinthian,....	5, 6, 7, 8, 9 and 10, ..... 1, 2, 3, 4, 26, 30, 11, 12, 13, 14, 16, 19 and part of 20.	Fifth. Third.
	Spring Garden.	Direct pumpage into mains.	15, 28, 29 and part of 20.	Thrd.
	Belmont, ..... Roxborough, .. Kensington & Spring Garden.	Belmont,..... Roxborough, .. Lehigh, .....	24 and 27,..... 21, 22 and part of 25,..... 17, 18, 31 and part of 25.	Fourth. Second. Sixth.
Delaware and Schuylkill combined,..... Delaware,	Frankford, ....	Frankford, ...	23 and part of 25,.....	First.

\*See a report upon a chemical examination of the water supplied to the city of Philadelphia by Professors Mallet, Wormley and Greene, 1885.

Records of Temperature, Rain-fall, etc., from Twenty Towns in Pennsylvania, viz :

Philadelphia; West Chester, Chester county; Fallsington, Bucks county; Quakertown, Bucks county; Drifton, Luzerne county; Wilkes-Barre, Luzerne county; North Mountain, Luzerne and Sullivan counties; Tamaqua, Schuylkill county; Schuylkill Haven, Schuylkill county; Pittsburgh, Allegheny county; Erie, Erie county; Catawissa, Columbia county; Chambersburg, Franklin county; Dyberry, Wayne county; Leetsdale, Beaver county; Grampian Hills, Clearfield county; Carlisle, Cumberland county.

*From Records of the Philadelphia Station, United States Signal Service.*

	BAROMETER. ELEV. 52.419.				THERMOMETER. ELEV. 66.97.				Rain-fall.	Cloudiness, mean Tenths.	HUMIDITY. PER CENTS.			
	7 A. M.	3 P. M.	11 P. M.	Range	A. M.	P. M.	P. M.	Mean.			A. M.	P. M.	P. M.	Mean.
1872.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Ins.					
1873.	30.019	29.989	29.990	48.3	48.3	57.4	51.3	52	47.83	5.39	70.23	54.45	69.27	61.66
1874.	30.013	29.937	29.993	48.2	48.2	56.5	49.9	51.5	54.62	5.8	72.3	57.1	69.6	66.8
1875.	30.066	30.030	30.013	49.2	49.2	57.9	50.7	52.6	46.81	5.2	72.0	54.9	70.1	63.7
1876.	30.133	29.973	30.006	46.7	46.7	55.2	48.3	50.1	40.19	4.79	72.9	57.5	70.7	67
1877.	30.013	29.934	29.939	49.2	49.2	57.7	50.5	52.5	47.38	4.91	73.5	57.4	71	63.3
1878.	30.023	29.935	30.000	50.4	50.4	59.4	52.0	53.9	37.26	5.21	75.2	57.9	73	69.2
1879.	29.962	29.909	29.913	51.2	51.2	59.8	52.7	51.6	34.53	4.9	74.29	57.6	73	68.3
1880.	30.015	29.990	30.028	49.6	49.6	58.8	51.6	53.4	36.75	4.7	76.1	59.6	74.6	70.1
1881.				50.5	50.5	60.5	52.5	51.5	33.61	4.8	71.1	51.5	73	68
1882.				53	53	60.2	52.4	51.2	30.31	5.2	79.9	59.3	75	71.3
1883.				51	51	59.5	53.4	51.6	45.58	5.2	71.9	57.3	72.2	68.1
1884.				49.7	49.7	59	51	53	39.17	4.7	81.8	70	82.3	73.1
1885.				49.5	49.5	59	51	53	39.34	5	81.8	66.6	79.8	76.1
1885.				47	47	57	49	51	33.35	4.6	76	57.4	74	69
Average.								52.2	40.44	5.03				69.2

*From Records of the Philadelphia Station, United States Signal Service.—(Continued.)*

	WIND DIRECTIONS —PER CENT.								DAYS.			
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calm.	Clear.	Fair.	Cloudy.
1872.	12	12	7	4	5	20	15	23	2	93	158	115
1873.	8	16	9	5	5	20	12	21	2	88	143	131
1874.	12	10	12	4	6	20	15	17	4	136	127	102
1875.	12	11	14	3	8	16	16	19	1	123	145	93
1876.	14	7	15	4	6	15	16	20	2	65	115	186
1877.	15	12	13	3	6	15	19	15	0.5	83	110	172
1878.	10	14	8	4	8	21	15	19	1	95	116	127
1879.	9	12	5	3	10	22	12	16	1	132	136	97
1880.	10	13	6	3	9	17	14	17	0.5	121	142	103
1881.	15	12	15	4	6	11	21	15	1	118	133	114
1882.	8	16	6	5	7	18	12	22	2	100	161	101
1883.	10	19	4	6	7	23	9	20	2	123	151	88
1884.	13	17	3	5	14	16	7	20	0.3	109	159	98
1885.	9	14	4	5	13	14	13	22	4.7	109	188	63
Average,	11.2	13.2	8.6	4.1	7.8	17.6	14	19.1	1.9	107	142.2	114.8

*The annual mean temperature in Philadelphia from 1800 to 1885, inclusive, with the annual amount of rain and snow, in inches, from 1825 to 1885.*

YEARS.	Mean annual temperature.	Rain in inches.	YEARS.	Mean annual temperature.	Rain in inches.
	Deg.			Deg.	
1800,	51.50		1843,	51.50	46.25
1801,	52.00		1844,	53.00	39.00
1802,	53.50		1845,	54.00	40.25
1803,	52.00		1846,	54.00	44.87
1804,	51.00		1847,	53.86	45.09
1805,	51.50		1848,	54.80	35.00
1806,	51.50		1849,	53.10	42.09
1807,	52.00		1850,	54.00	54.54
1808,	52.00		1851,	54.04	35.50
1809,	51.00		1852,	54.04	46.20
1810,	51.00		1853,	55.44	42.96
1811,	52.00		1854,	55.38	45.23
1812,	51.00		1855,	54.53	44.65
1813,	50.50		1856,	51.92	33.52
1814,	51.00		1857,	53.48	48.45
1815,	51.25		1858,	55.20	41.06
1816,*	49.00		1859,	54.49	54.75
1817,	52.50		1860,	54.12	45.40
1818,	53.00		1861,	54.71	45.41
1819,	51.00		1862,	53.58	45.66
1820,	51.75		1863,	54.13	49.64
1821,	51.50		1864,	54.60	46.73
1822,	53.00		1865,	55.77	53.64
1823,	53.50		1866,	54.90	43.57
1824,	53.75		1867,	53.41	62.93
1825,	54.00	29.30	1868,	52.83	50.18
1826,	53.00	40.00	1869,	54.23	44.16
1827,	50.00	39.50	1870,	56.44	43.56
1828,	54.00	38.50	1871,	54.91	45.98
1829,	53.00	42.00	1872,†	54.85	49.02
1830,	52.50	44.75	1873,	51.4	54.62
1831,	53.00	41.00	1874,	52.6	46.31
1832,	51.00	39.25	1875,	50.3	40.24
1833,	52.50	48.38	1876,	52.6	47.39
1834,	52.25	33.00	1877,	54.2	37.36
1835,	52.00	30.50	1878,	54.7	34.53
1836,	50.25	43.00	1879,	54.6	36.75
1837,	52.25	37.10	1880,	53.6	33.58
1838,	53.00	44.25	1881,	54.2	30.21
1839,	52.00	44.75	1882,	54.6	45.58
1840,	52.25	47.50	1883,	53.5	39.17
1841,	51.50	55.50	1884,	53.5	39.34
1842,	52.75	47.50	1885,	51.0	33.35

\*Ice in every month; the coldest year on record in the city; the year without a summer.

†From this year observations taken at United States Signal Office used in this department.

Temperature: Mean for 86 years, 52.92° Fahr.

Rain-fall: Mean for 61 years, 43.25 in.

*Mean Monthly and Annual Rain-fall at West Chester, Pa.*

YEAR.	1st month.	2d month.	3d month.	4th month.	5th month.	6th month.	7th month.	8th month.	9th month.	10th month.	11th month.	12th month.	Year.	Mean annual tem- perature.
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	Deg.
1875, . . . . .	3.84	4.22	5.12	2.72	2.09	4.96	8.84	9.67	3.12	2.11	6.10	4.35	52.14	47.78
1876, . . . . .	2.30	4.56	7.49	2.11	4.26	2.32	7.21	1.32	12.33	2.50	4.90	2.76	54.06	50.19
1877, . . . . .	4.15	2.55	5.86	3.10	0.83	5.08	6.65	1.42	5.07	8.06	8.11	2.05	44.10	51.68
1878, . . . . .	5.22	4.00	3.71	3.89	4.32	4.16	4.35	2.90	3.06	3.22	3.38	5.84	40.41	52.05
1879, . . . . .	2.88	2.62	2.73	5.19	1.38	4.13	2.60	6.10	2.20	0.60	1.63	6.13	38.19	45.17
1880, . . . . .	2.92	3.01	4.71	3.69	1.35	1.91	6.90	3.18	1.49	2.28	2.90	6.63	40.99	51.59
1881, . . . . .	5.18	5.99	6.36	1.10	2.59	5.60	1.77	0.91	1.53	3.00	3.08	4.89	34.60	51.91
1882, . . . . .	6.38	4.95	4.61	2.36	6.94	1.50	2.90	4.38	7.23	1.15	1.42	1.96	45.70	50.46
1883, . . . . .	4.52	5.43	3.62	3.52	2.71	5.72	2.54	5.20	3.61	4.45	2.30	4.63	40.27	49.53
1884, . . . . .	7.32	7.29	6.09	2.94	3.64	7.52	5.27	2.12	0.42	2.56	4.36	7.05	56.58	50.72
1885, . . . . .	4.65	6.39	1.34	2.20	4.07	1.26	0.93	9.51	1.49	6.25	4.71	4.18	46.98	49.19

WEST CHESTER, PA.. *April 12, 1886.*

DEAR DOCTOR: The above is the mean monthly and annual rain fall and mean annual temperature, taken from my "meteorological observations," as requested in thy letter of the 7th inst.

Height of rain-gauge above tile-water, 450 feet.

Thine truly,

J. C. GREEN.

Dr. WM. PEPPER, *Philadelphia.*

*Carlisle.*

	DAYS.			
	Fair.	Cloudy.	Rain.	Snow.
1843, . . . . .	205	160	91	19
1844, . . . . .	202	164	75	16
1845, . . . . .	214	151	68	20
1848, . . . . .	218	148	71	4
1849, . . . . .	244	122	68	20
1850, . . . . .	191	174	89	20
1852, . . . . .	179	187	93	26
Mean, . . . . .	207	158	92	19

Pittsburgh, 1825-'54, 50.86°; rain-fall, 1837-'54, 34.96 inches.

Carlisle, 1840-'54, 51.10°; rain-fall, 1849-'54, 34.01 inches.

Carlisle barracks (now the site of the Indian Industrial School) is situated in a beautiful valley, ten miles wide, about midway between the north and south mountain spurs of the Allegheny range, five miles from the mountains. A small marshy tract of land (the only one in the vicinity) lies north of the barracks some three or four hundred yards. There is also a boggy tract along the Letort creek. This tract has been, at times, partially submerged.—From "Report on Mortality, U. S. A." Coolidge.



*Fallsington, Bucks County, Pa.*

MONTH.	Highest barometer during mo.	Lowest barometer during mo.	Mean barometer for month.	Highest temperature during mo.	Lowest temperature during mo.	Mean temperature for month.	Prevailing winds during month.	Total rainfall or melted snow during month.	No. of days on which 0.01 or more rain fell, snow melted.	No. of days on which cloudiness averaged 8 or more on a scale of 10.	No. of thunderstorms during month.	No. of days on which frost occurred.	Snow fall.
<b>1879.</b>													
July, . . . . .	30.13	29.43	29.825	97	63	75.00	S. W.	6.59	9	5	7	0	.00
August, . . . . .	30.02	29.60	29.875	92	59	71.70	"	8.80	11	8	4	0	.00
September, . . . . .	30.28	29.63	29.955	87	43	62.75	N. S. W.	1.48	6	5	14	2	.00
October, . . . . .	30.59	29.47	29.906	86	29	59.50	S. W., N. W.	.48	5	4	0	5	.00
November, . . . . .	30.41	29.43	30.029	74	15	40.03	N. W.	1.78	9	6	0	14	1.75
December, . . . . .	30.51	29.62	30.045	63	12	37.50	S. W., N. W.	5.98	14	12	0	7	3.00
<b>1880.</b>													
January, . . . . .	30.54	29.49	30.089	64	6	39.80	N. W., N. E.	2.72	9	12	1	13	5.00
February, . . . . .	30.49	29.15	30.003	66	13	37.35	N. W., S. W.	2.34	10	9	0	7	4.00
March, . . . . .	30.35	29.32	29.959	73	21	38.16	N. W.	5.27	14	12	0	5	6.50
April, . . . . .	30.25	29.51	29.916	82	31	52.00	N. W., S. W.	3.98	12	7	4	6	.00
May, . . . . .	30.23	29.70	29.963	97	40	68.25	S. W.	.78	3	4	0	0	.00
June, . . . . .	30.17	29.55	29.896	94	62	72.66	S. W., N. W.	2.08	11	4	4	0	.00
<b>1881.</b>													
July, . . . . .	30.06	29.63	29.883	92	62	77.85	S. W.	12.51	13	10	7	0	.00
August, . . . . .	30.25	29.65	29.956	92	58	72.15	"	3.10	10	9	3	0	.00
September, . . . . .	30.25	29.60	29.926	90	48	65.20	"	2.64	7	5	1	0	.00
October, . . . . .	30.31	29.42	30.026	80	34	50.50	N. W.	2.25	8	7	0	11	.00
November, . . . . .	30.63	29.58	30.153	66	12	38.80	"	2.27	8	10	0	17	5.25
December, . . . . .	30.39	29.56	29.963	47	—8	26.88	"	4.45	11	10	0	13	20.75
<b>1881.</b>													
January, . . . . .	30.56	29.32	30.073	46	—14	25.45	"	4.94	9	11	0	7	9.00
February, . . . . .	30.71	29.38	30.116	58	Zero.	29.85	"	4.20	11	9	1	9	8.00
March, . . . . .	30.25	29.10	29.713	62	24	39.00	"	4.09	9	11	1	13	1.50
April, . . . . .	30.25	29.43	29.853	79	24	48.00	"	.71	6	9	2	4	0.25
May, . . . . .	30.37	29.59	29.983	92	47	64.32	S. W.	3.04	13	9	6	0	.00
June, . . . . .	30.09	29.62	29.843	80	53	67.03	N. W.	4.71	14	10	5	0	.00

July, . . . . .	30.16	29.90	29.873	92	65	75.25	N. W.	1.13	4	6	4	0	.00
August, . . . . .	30.24	29.61	29.953	97	62	74.50	S. W.	1.44	7	6	3	0	.00
September, . . . . .	30.25	29.82	30.023	103	55	74.00	"	.64	4	6	8	0	.00
October, . . . . .	30.47	29.47	30.070	98	31	59.50	"	2.00	11	12	1	7	.00
November, . . . . .	30.59	29.61	30.113	94	25	46.50	N. W.	2.85	10	11	0	11	.00
December, . . . . .	30.54	29.38	30.096	63	22	44.50	"	3.32	11	12	0	13	.00
1882.													
January, . . . . .	30.76	29.33	30.116	48	2	30.15	"	5.02	12	15	0	11	12.65
February, . . . . .	30.66	29.45	30.096	58	15	35.00	"	4.99	9	9	2	10	8.00
March, . . . . .	30.62	29.59	30.050	64	24	42.00	"	2.31	12	9	2	5	2.50
April, . . . . .	30.45	29.39	29.990	75	20	42.00	"	2.37	8	9	1	5	.00
May, . . . . .	30.38	29.49	29.880	83	40	56.25	S. W.	5.14	14	14	1	3	.00
June, . . . . .	30.18	29.53	29.863	93	57	70.50	"	2.30	10	3	5	0	.00
July, . . . . .	30.25	29.60	29.973	95	60	75.50	S. W.	1.69	7	5	3	0	.00
August, . . . . .	30.25	29.61	29.994	91	57	72.50	"	5.03	12	9	1	0	.00
September, . . . . .	30.23	29.60	30.013	90	52	67.50	N. E.	12.35	10	9	4	0	.00
October, . . . . .	30.28	29.74	30.060	76	39	59.00	"	1.98	14	13	1	2	.00
November, . . . . .	30.43	29.69	30.123	73	19	40.75	N. W.	1.63	9	9	0	15	8.50
December, . . . . .	30.41	29.68	30.090	48	11	30.00	"	2.02	6	7	0	20	.00
1883.													
January, . . . . .	30.58	29.55	30.100	44	2	27.50	N. E.	4.07	19	18	1	8	14.00
February, . . . . .	30.08	29.74	30.243	60	6	32.50	N. W.	4.60	15	7	0	8	8.15
March, . . . . .	30.45	29.32	29.962	64	11	35.00	"	2.60	8	6	0	12	2.50
April, . . . . .	30.42	29.65	30.008	72	32	48.25	N. E., N. W.	3.98	14	8	3	5	.00
May, . . . . .	30.33	29.45	29.955	85	45	61.15	N. W.	3.34	12	8	4	1	.00
June, . . . . .	30.42	29.63	29.970	91	52	72.00	S. W.	5.04	14	7	5	0	.00

## Fallington, Bucks County, Pa.—(Continued).

MONTH.	Highest barometer during mo.	Lowest barometer during mo.	Mean barometer for month.	Highest temperature during mo.	Lowest temperature during mo.	Mean temperature for month.	Relative humidity—mean during month.	Prevailing winds during month.	Total rainfall or melted snow during month.	No. of days on which 0.01 or more rain fell, snow melted.	No. of days on which cloudiness averaged 8 or more on a scale of 10.	No. of thunder storms during month.	No. of days on which frost occurred.	Snow fall.
1883.														
July, . . . . .	30.20	29.75	29.966	93	57	74.25	. . . . .	S. W.	2.05	9	4	2	0	.00
August, . . . . .	30.24	29.67	30.020	91	52	68.00	. . . . .	S. W.	5.36	6	5	3	0	.00
September, . . . . .	30.41	29.52	30.056	84	42	63.25	. . . . .	N. W.	3.64	10	9	3	4	.00
October, . . . . .	30.58	29.46	29.948	81	35	53.50	. . . . .	N. E.	4.02	14	10	1	6	.00
November, . . . . .	30.57	29.73	30.134	74	18	44.00	. . . . .	S. W.	1.56	7	9	0	15	.00
December, . . . . .	30.63	29.53	30.096	56	3	33.25	. . . . .	N. W.	3.31	14	13	1	19	15.25
1884.														
January, . . . . .	39.79	29.17	30.110	47	4	26.00	. . . . .	"	4.90	15	11	0	14	11.65
February, . . . . .	30.70	22.29	30.080	64	8	37.00	. . . . .	"	5.04	18	15	1	6	4.60
March, . . . . .	30.40	29.55	30.005	63	8	39.75	. . . . .	"	4.79	17	18	1	6	7.75
April, . . . . .	30.15	29.18	29.864	73	33	49.54	. . . . .	"	2.25	8	8	2	3	.00
May, . . . . .	30.25	29.65	29.948	87	46	61.25	. . . . .	"	4.48	13	5	3	1	.00
June, . . . . .	30.46	29.76	30.072	93	53	70.50	. . . . .	S. W.	5.30	8	3	2	0	.00
July, . . . . .	29.98	29.65	29.860	91	62	71.75	. . . . .	N. W.	4.24	15	7	2	0	.00
August, . . . . .	30.27	29.75	30.044	93	56	71.86	. . . . .	S. W.	4.58	10	5	1	0	.00
September, . . . . .	30.44	29.76	30.099	92	48	69.50	. . . . .	"	0.22	3	1	1	0	.00
October, . . . . .	30.54	29.77	30.132	81	31	54.58	71.849	"	2.30	12	9	1	7	.00
November, . . . . .	30.42	29.52	30.056	62	20	40.50	74.396	N. W.	3.12	7	7	0	0	.25
December, . . . . .	30.61	29.55	30.140	62	Zero.	32.75	80.530	S. W. to N.	6.00	14	10	0	11	7.35
1885.														
January, . . . . .	30.75	29.38	30.099	57	4	28.62	69.670	N. W.	4.03	9	6	0	11	3.45
February, . . . . .	30.45	29.16	29.967	40	—1	21.13	80.000	"	4.91	14	5	1	8	17.15
March, . . . . .	30.45	29.62	30.043	59	7	29.14	68.530	"	1.19	9	5	1	12	7.25
April, . . . . .	30.56	29.55	30.042	84	29	48.75	67.596	S. W.	2.30	10	6	1	7	.00
May, . . . . .	30.24	29.65	29.975	83	42	57.25	74.420	N. E.	1.51	11	5	2	2	.00
June, . . . . .	30.26	29.53	30.005	92	55	68.75	71.500	S. W.	1.02	5	0	2	0	.00

July, . . . . .	80.16	29.72	29.938	97	59	74.00	77.287	S. W.	4.05	12	1	5	0	0.00
August, . . . . .	80.25	29.72	29.997	90	61	69.25	88.997	"	7.53	13	5	9	0	0.00
September, . . . . .	80.35	28.48	30.254	82	42	61.75	79.700	"	1.07	7	8	2	0	0.00
October, . . . . .	80.26	28.20	30.033	75	34	51.65	82.440	N. W.	4.23	13	6	2	11	0.00
November, . . . . .	80.34	29.64	29.982	70	26	48.25	80.577	"	3.58	12	8	0	17	0.20
December, . . . . .	80.70	29.25	30.017	58	10	34.25	77.570	"	3.26	11	5	0	13	0.10
1898.														
January, . . . . .	30.77	28.82	30.058	56	-3	25.75	81.255	"	4.12	13	9	0	5	10.25
February, . . . . .	30.47	29.40	30.070	63	-5	27.75	80.678	"	5.67	9	6	0	10	9.10
March, . . . . .	30.48	29.38	29.902	65	12	37.00	76.967	"	3.53	13	7	2	10	0.00

Rain-gauge, Signal Service, 10 inches from the ground.

Thermometers, Signal Service, authorized, wet bulb.

Thermometers, Signal Service, authorized, dry bulb, 47 feet above sea-level.

Thermometers, Signal service, maximum and minimum, 47 feet above sea-level.

Barometer, Woodruff's ; iron cistern ; readings reduced ; bulb 44 feet above sea-level.

Height of ground, 41 feet above sea-level.

MILNOR GILLINGHAM.

FALLSINGTON, BUCKS COUNTY, PA.

*The following is a tabular statement of the records of the weather, kept at Quakertown, Bucks County, Pa., for five years ending December 31, 1885, by J. L. Heacock.*

	Highest temperature.	Lowest temperature.	Average temperature.	Greatest temperature, mean.	Lowest temperature, mean.	Daily range of temperature, greatest.	Daily range of temperature, least.	Daily range of temperature, average.	Monthly range of temperature.	Amount of rainfall and melted snow.
<b>1881.</b>										
January, . . . . .	41	-18	23.12	31.51	14.77	38	7	16.74	54	3.40
February, . . . . .	51	-5	27.64	35.60	18.96	38	6	17	56	4.01
March, . . . . .	56	18	35.16	41.64	28.70	25	8	12.93	38	4.46
April, . . . . .	53	19	45.38	53.80	35.26	36	2	19.35	65	5.69
May, . . . . .	80	32	68.64	78.29	51.16	29	9	21.51	58	5.12
June, . . . . .	87	46	64.06	74.23	51.23	29	7	19.66	41	4.10
July, . . . . .	91	55	72.70	83	62.40	30	9	21	36	7.73
August, . . . . .	97	54	73.16	84.80	62.90	33	9	24.32	43	7.27
September, . . . . .	102	48	72.60	83.20	62.30	33	8	20.48	54	8.89
October, . . . . .	88	28	57.51	67.93	47.09	33	3	20.48	60	1.57
November, . . . . .	66	22	48.33	50.80	33.30	27	4	15.60	44	2.15
December, . . . . .	62	18	39.13	46.39	30.33	31	3	15.45	41	4.71
Averages and rainfall for year,	76.13	17.50	51.87	60.52	41.81	31	5	18.62	49.42	32.10
<b>1882.</b>										
January, . . . . .	47	-2	26.70	32.87	20.48	20	5	12.39	49	2.95
February, . . . . .	54	12	32.57	41.07	24.10	29	5	16.96	42	4.18
March, . . . . .	61	20	37.45	45.87	29.70	29	8	16.22	41	4.47
April, . . . . .	70	22	44.56	51.26	34.73	32	7	19.43	48	2.20
May, . . . . .	80	32	52.58	62.32	44.16	29	4	19.94	48	7.30
June, . . . . .	89	44	66.00	77.43	53.76	33	9	21	45	3.00
July, . . . . .	92	49	71.29	81.51	61.22	30	6	20	43	1.95
August, . . . . .	88	46	69.82	79.29	59.88	30	11	19.90	42	3.95
September, . . . . .	86	40	65.83	70.44	56.22	40	7	18.78	46	7.25
October, . . . . .	73	33	54.89	62.36	47.43	28	5	14.93	40	1.85
November, . . . . .	70	15	38.96	46.53	30.09	29	7	15.30	55	1.65
December, . . . . .	46	5	29.06	36.19	20.19	26	1	18.90	41	1.20
Averages and rainfall for year,	71.33	26.33	49.14	57.51	40.29	29.51	6	17.39	45	40.95
<b>1883.</b>										
January, . . . . .	42	1	23.29	29.91	16.68	26	4	13.26	40	3.40
February, . . . . .	48	7	28.21	35.57	20.86	29	2	14.36	41	3.20
March, . . . . .	59	1	31.60	40.58	23.32	34	8	18.26	58	1.69
April, . . . . .	66	19	48.87	51.23	35.76	29	3	18.46	47	2.65
May, . . . . .	78	35	57.03	68.03	46.03	31	10	22.32	43	2.09
June, . . . . .	83	53	67.00	77.73	57.76	29	5	19.76	32	6.98
July, . . . . .	90	49	70.89	80.45	60.29	25	9	20.74	41	1.05
August, . . . . .	86	50	66.13	76.87	55.19	29	8	21.29	36	2.25
September, . . . . .	79	37	59.33	69.33	49.70	33	6	19.63	42	3.72
October, . . . . .	77	28	50.26	59.74	41.81	30	4	16.87	49	4.10
November, . . . . .	68	16	41.33	49.43	33.16	30	5	16.33	52	1.47
December, . . . . .	52	4	30.66	33.13	22.03	32	4	16.09	48	2.15
Averages and rainfall for year,	69.17	25	47.47	56.59	38.47	29.53	5.66	18.11	44.08	31.75
<b>1884.</b>										
January, . . . . .	42	-2	22.53	30.09	15.06	30	8	15.42	41	2.96
February, . . . . .	52	2	32.81	38.51	26.21	27	4	9	50	4.74
March, . . . . .	59	-2	31.19	41.97	25.80	30	4	15.63	61	4.99
April, . . . . .	68	28	46.06	55.20	35.23	31	5	18.56	40	2.70
May, . . . . .	81	37	57.59	66.80	48.19	35	8	20.19	41	3.53
June, . . . . .	88	41	66.53	78.26	55.76	36	8	21.16	47	6.54
July, . . . . .	86	52	67.55	76.22	59.20	28	7	17.09	34	7.92
August, . . . . .	88	45	68.32	77.48	59.13	26	7	18.86	43	3.76
September, . . . . .	89	39	65.96	76.66	54.90	31	13	22	50	5.58
October, . . . . .	78	27	53.26	62.77	43.80	30	4	19	51	4.38
November, . . . . .	60	17	40.03	48.70	31.43	29	3	17.26	43	3.53
December, . . . . .	52	0	30.36	36.64	24.09	25	3	12.22	52	6.46
Averages and rainfall for year,	70.23	23.66	48.72	57.44	39.90	29.83	5.83	17.16	46.83	52.04

*Records of the weather at Quakertown, Bucks county, Pa.—Continued.*

	Highest temperature.	Lowest temperature.	Average temperature.	Greatest temperature, mean.	Lowest temperature, mean.	Daily range of temperature, greatest.	Daily range of temperature, least.	Daily range of temperature, average.	Monthly range of temperature.	Amount of rainfall and melted snow.
1885.										
January, . . . . .	57	0	27.39	36.06	18.63	40	1	16.42	57	4.53
February, . . . . .	45	— 4	19.82	28.85	11.91	27	9	17.05	49	4.83
March, . . . . .	52	2	26.83	31.55	18.23	25	7	16.61	50	1.21
April, . . . . .	62	21	45.10	57.20	33	36	11	22.20	58	2.79
May, . . . . .	80	31	55.45	65.06	46.16	34	10	18.90	49	2.83
June, . . . . .	89	42	77.13	87.08	59.06	33	8	21.10	47	.81
July, . . . . .	96	48	72	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	1.26
August, . . . . .	88	44	67.43	75.77	59.03	24	3	16	44	8.34
September, . . . . .	87	26	56.50	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	.53
October, . . . . .	72	26	49	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	4.29
November, . . . . .	64	20	40.07	46.99	34.06	22	0	12.90	44	4.23
December, . . . . .	48	9	31.16	38.13	24.51	25	7	13	40	3.15
Average and rainfall for year,	71.67	22.25	47.45	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	37.63

REMARKS.—This town is elevated on an average 516 feet above sea level. Observations of temperature are taken from a self-registering thermometer, and the mean is for twenty-four hours.

*Statements taken from the voluntary signal service observations made by H. D. Miller, superintendent of Drifton hospital, Drifton, Luzerne county, Pa.*

Latitude of station, 41° 1' 1" north.

Longitude of station, 1° 4' 48" east of W.

Height of station above the sea, 1,655 feet.

MONTH.	Highest temperature.	Lowest temperature.	Mean temperature.	Snowfall.	Rain and melted snowfall.
<b>1884.</b>					
February, . . . . .	56	—8	27.3	8.25	4.30
March, . . . . .	65	—8	29	5.50	4.04
April, . . . . .	73	24	40.48	23	4.36
May, . . . . .	88	32	53.07		3.62
June, . . . . .	92	41	65.70		2.88
July, . . . . .	89	47	64.08		6.77
August, . . . . .	91	40	66.34		4.79
September, . . . . .	91	37	63.08		2.50
October, . . . . .	81	22	49.45		2.67
November, . . . . .	68	14	37.76		3.83
December, . . . . .	62	—8	30.46	12.5	4.76
<b>1885.</b>					
January, . . . . .	62	—9	24.07	11.5	5.25
February, . . . . .	45	—16	15.85	31	3.39
March, . . . . .	51	—6	21.54	5.5	.76
April, . . . . .	85	18	43.77	4.25	1.99
May, . . . . .	85	31	56.36		2.30
June, . . . . .	87	41	64.79		2.00
July, . . . . .	97	42	70.39		2.70
August, . . . . .	90	40	65.06		7.44
September, . . . . .	82	38	59.09		1.39
October, . . . . .	77	27	48.72		5.66
November, . . . . .	72	12	37.39	27.5	5.46
December, . . . . .	56	—4	28.12	2.75	2.82
<b>1886.</b>					
January, . . . . .	60	—12	20.69	21.75	6.42
February, . . . . .	59	—12	36	1.5	3.47
March, . . . . .	65	—3	31.83	8	5.15

The record for April has not yet been made up.

H. D. MILLER.

*Rainfall, Franklin, Venango county, Pa. Recorded by Joseph Bell.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1875, . . . . .	2.56	1.56	4.56	2.81	3.25	4.62	3.32	5.62	4.62	4	4	5.25	48.17
1876, . . . . .	4	4.18	4.81	3.31	1.68	3.50	4.28	2.60	9.56	2.25	3.18	3.80	48.96
1877, . . . . .	4.18	1.56	6.26	1.20	4.07	6.52	6.72	1.10	3.08	4.08	5.53	2.32	42.96
1878, . . . . .	3.67	2.08	2.08	2.74	2.76	2.91	5.65	.81	6.21	2.04	3.26	5.42	38.12
1879, . . . . .	3.48	5.11	3.10	1.89	.86	3.27	3.75	1.35	2.27	1.95	5.41	5.01	34.67
1880, . . . . .	3.64	2.92	2.61	2.21	2.78	4.94	1.88	3.81	2.82	2.40	2.62	2.50	34.56

Average rainfall, 6 years, 40.93 in.

Wilkes-Barre, Luzerne county, Pa.  
Latitude, 41° 14' 40.4". Longitude, 1° 10' 4.6". Altitude, 548.1 feet.

*Statement of the monthly and annual temperature, mean, maximum and minimum, together with the rainfall.*

Month.	1881.			1882.			1883.			1884.			1885.			Rain and Melted Snow in Inches.						
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	1881.	1882.	1883.	1884.	1885.	Aver.	
January,	24.2	44	-9	27.5	47	-5	22.8	38	-6	21.5	50	-9	24.8	54.5	-7.5	...	3.25	4.98	2.41	5.18	4.22	
February,	27.6	53	-5	28.4	54	15	23.8	45	11	22.4	59	-1	17.8	45	-12	...	5.57	2.83	2.49	3.27	3.40	
March,	28.9	57	20	32.4	63	21	31.0	62	7	33.5	60.9	-2.5	24.8	57.2	-8	...	2.27	2.55	4.25	2.59	2.36	
April,	47.2	58	22	46.6	70	25	46.0	72	26	45.9	76.1	26	46.8	89	21.2	...	2.10	2.20	2.46	2.59	2.40	
May,	58.8	91	42	55.5	85	36	55.8	61.5	36	56.2	91	33	53.2	89	41	...	5.75	5.28	2.97	2.98	4.65	
June,	68.8	97	51	70.7	91	55	63.4	85	38	70	91	40	72.4	97.2	40	4.00	6.16	5.52	2.71	4.73	...	
July,	77.3	89	52	72.9	89	57	63.4	87.5	43	72.2	90	36	67.4	96.4	43	1.88	5.63	5.08	2.99	4.78	...	
August,	78.1	92	54	70.9	89	53	63.4	85.7	40	68.2	94	38	67.4	96.4	43	1.88	5.63	5.08	2.99	4.78	...	
September,	73.4	86	40	64.8	80	46	57.5	68.2	30.1	62.4	94	38	59.9	83.2	35.5	5.82	2.70	5.15	1.40	3.27	...	
October,	64.3	68	38	56.9	73	23	49.8	72.2	27	51.6	81.8	28	49.8	83.2	35.5	1.70	1.41	5.15	1.40	4.68	2.81	...
November,	48.3	64	22	39.2	59.5	73	12	41.6	68.5	11.6	38.4	64.1	15.5	33.7	72	2.70	1.69	1.45	8.30	5.15	2.86	...
December,	37.5	53	21	28.3	49	8	30.4	54.5	4.8	30.7	49	-7	32.5	54.4	5	4.83	1.06	2.00	4.53	2.68	5.03	...
Mean of years,	58.4	...	...	50.5	...	...	47.6	...	...	48.7	...	...	46.7	...	...	28.05	40.71	44.20	40.86	41.98	41.09	...

The monthly means are made up from the daily means. These are made from three daily observations, at 7 A. M., 2 P. M., and 9 P. M., doubling the 9 P. M. observation, and dividing by 4.

I have no record of rainfall before June, 1881, and know of none in this city. I have used the record of my friend Judge E. L. Dana in supplementing my own, both in temperature and rain.

In making out the averages of rainfall for January, February, March and April, I have added in the fall of these months respectively this year. The May average is only for four years.

Rev. F. B. Hodge,  
118 South Franklin Street



*Temperature at North Mountain, Sullivan and Luzerne Counties.  
Altitude, 2,600 feet. Recorded by Dr. Lewis H. Taylor, of Wilkes-  
Barre, Pa.*

JULY, 1876.				AUGUST, 1876.			
DATE.	Max.	Min.	Mean.	DATE.	Max.	Min.	Mean.
1, . . . . .	80	56.5	68.2	1, . . . . .	73	52.5	67.7
2, . . . . .	78.6	60.5	69.5	2, . . . . .	72.5	56	64.3
3, . . . . .	78	63	70.5	3, . . . . .	69.5	62.7	56
4, . . . . .	76	62.5	69.2	4, . . . . .	70	59.5	64.7
5, . . . . .	75	60	67.5	5, . . . . .	81	64	72.5
6, . . . . .	75	60	67.5	6, . . . . .	84	63.5	73.8
7, . . . . .	79.7	54	66.9	7, . . . . .	84	63.5	73.8
8, . . . . .	87	65.5	76.2	8, . . . . .	80	49	64.7
9, . . . . .	87	69.5	78.2	9, . . . . .	79	53.5	66.5
10, . . . . .	85	66	75.5	10, . . . . .	79	56.5	67.8
11, . . . . .	86	63	74.5	11, . . . . .	79.5	58	68.7
12, . . . . .	84	65	74.5	12, . . . . .	80	60.5	70.2
13, . . . . .	84	65	74.5	13, . . . . .	86	60.5	73.3
14, . . . . .	80.2	64	72.1	14, . . . . .	76.5	59.5	68
15, . . . . .	80	63.8	71.9	15, . . . . .	81	64	72.5
16, . . . . .	85	56	70.5	16, . . . . .	77	58	67.8
17, . . . . .	78.8	55	66.9	17, . . . . .	75	61	68
18, . . . . .	81.8	62	71.9	18, . . . . .	76	53	64.5
19, . . . . .	82.5	64	73.2	19, . . . . .	66	61.5	63.2
20, . . . . .	85.2	65.8	74.5	20, . . . . .	68	59	63.5
21, . . . . .	71	56.5	67.7	21, . . . . .	63	41	52
22, . . . . .	72.4	49.5	60.9	22, . . . . .	69.5	41.2	55.3
23, . . . . .	68.9	60.5	64.7	23, . . . . .	75	55.5	65.2
24, . . . . .	63.2	45.6	54.4	24, . . . . .	76	53	64.5
25, . . . . .	63.8	45.8	54.8	25, . . . . .	81	55	68
26, . . . . .	64.8	46.5	55.6	26, . . . . .	70	49	59.5
27, . . . . .	71.8	44	57.9	27, . . . . .	68	47	57.5
28, . . . . .	68.8	58.5	63.7	28, . . . . .	70	47	58.5
29, . . . . .	66.5	56.8	61.7	29, omitted,			
30, . . . . .	62.8	54.5	58.7	30, " . . . . .			
31, . . . . .	60.7	52	56.3	31, " . . . . .			
Average, . .			72.8	Average, . .			64.5

*Record showing temperature and rainfall at Tamaqua and Mahanoy Plane, Schuylkill County, Pa.*

MONTH.	Highest temperature.	Lowest temperature.	Mean temperature.	Total rain or melted snow.	No. of days on which 0.01" fell.	Depth of snow in inches on ground at end of month.	Total snow-fall in month.
<b>TAMAQUA, 1884.</b>							
May, . . . . .	90	46	67.02	4.35	9		
June, . . . . .	100	58	78	3.74	4		
July, . . . . .	94	60	74.5	6.96	10		
August, . . . . .	96	58	76.2	7.13	18		
September, . . . . .	98	53	72	1.36	5		
October, . . . . .	85	32	55.6	2.24	11		
November, . . . . .	66	20	40	2.90	6	1.25	
December, . . . . .	56	—4	31	7.40	9		14.65
<b>1885.</b>							
January, . . . . .	56	0	25.2	4.09	6	5	7
February, . . . . .	42	—12	19.1	1.40	2		2.25
<b>MAHANAY PLANE, 1885.</b>							
February, . . . . .	37	3	20.0	2.16	5		23
March, . . . . .	55	2	27.9	3.9	2	4	4.50
April, . . . . .	84	26	49.8	2.28	8		4.00
May, . . . . .	87	40	61.2	3.42	10		
June, . . . . .	92	52	70	1.04	3		
July, . . . . .	97	58	77.56	1.75	7		
August, . . . . .	89	53	70.2	9.99	12		
September, . . . . .	84	45	64.2	.76	5		
October, . . . . .	74	35	53.0	5.54	10		
November, . . . . .	67	13	41.6	6.78	12	6	24
December, . . . . .	58	8	33.9	4.17	5		4
<b>1886.</b>							
January, . . . . .	52	—4	24.8	8.46	10		25.75
February, . . . . .	51	6	28.6	5.59	5		
March, . . . . .	64	7	39.7	7.59	6		

Mean annual temperature for 1885, . . . . . 50.58 degrees.

Annual rainfall for 1885, . . . . . 52.24 inches.

*Rainfall in Schuylkill Haven. Schuylkill County, Pa., 1880-1885.*

This statement shows the inches and hundredth parts of an inch, and is taken from an accurate water-gauge.

1880, . . . . .	37.93 inches.
1881, . . . . .	42.83 inches.
1882, . . . . .	35.18 inches.
1883, . . . . .	38.51 inches.
1884, . . . . .	43.88 inches.
1885, . . . . .	34.80 inches.

Mean, . . . . . 38.85 inches.

Furnished by William H. Dechant, Division Engineer, P. & R. R. R. Co. (Mahanoy Plane Division).

*Consolidated Meteorological Reports from twelve cities and stations in Pennsylvania.*

	Pittsburgh.	Erie.	Philadelphia.	Catawissa, Columbia county.	Chambersburg, Franklin county.	Derry, Wayne county.	Lewistown, Beaver county.	Quakertown, Bucks county.	Grampian Hills, Clearfield county.	Carlisle, Cumberland county.	West Chester, Chester county.	State College.
Rain-fall, 1872.	51.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. 1873.	41.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. 1874.	39.4	87.8	.....	.....	.....	.....	.....	.....	.....	.....	52	.....
Do. 1875.	34.05	41.3	.....	.....	.....	.....	.....	.....	.....	.....	54	.....
Do. 1876.	37	44	.....	.....	.....	.....	.....	.....	.....	.....	44	.....
Do. 1877.	34.7	39	.....	.....	.....	.....	.....	.....	.....	.....	44	.....
Do. 1878.	38.7	55	.....	.....	.....	.....	.....	.....	.....	.....	40	.....
Do. 1879.	37	56.2	.....	.....	.....	.....	.....	.....	.....	.....	38	.....
Do. 1880.	23	41	.....	.....	.....	.....	.....	.....	.....	.....	41	.....
Do. 1881.	37.8	37.6	.....	.....	.....	.....	.....	.....	.....	.....	34	.....
Do. 1882.	38.6	46.3	.....	.....	.....	.....	.....	.....	.....	.....	46	.....
Do. 1883.	43.1	44.8	.....	.....	.....	.....	.....	.....	.....	.....	34	.....
Do. mean.	37.04	42.89	.....	.....	.....	.....	.....	.....	.....	.....	36.81	.....
Do. mean, reduced to sea-level.	51.9 (72.79)	49.5 (74.79)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barometer, reduced to sea-level.	30.005 (72.79)	29.985 (74.79)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humidity, per cent.	69.9 (72.88)	72.5 (74.88)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dew-point.	41.9 (83)	39 (83)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cloudiness, in tenths.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Days clear.	5.6	6.1	4.7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. fair.	147	70	123	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. cloudy.	130	149	154	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. rain.	.....	146	88	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elevation, feet.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average hourly movement of wind, miles.	6 (13 yrs.)	10.3 (10 yrs)	9.7 (14 yrs.)	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

\* W. G. Yetter.

† J. L. Hasecock.

‡ J. O. Green.

Especial reference should here be made to the assistance derived from the following sources in the preparation of this paper :

John S. Billings, M. D., LL. D., Surgeon General's Office.

Dr. Persifor Frazer, Philadelphia.

Prof. J. Peter Lesley, LL. D., State Geologist, Pennsylvania.

Mr. Charles A. Ashburner, Second Geological Survey, Pennsylvania.

Henry I. Bowditch, M. D., Boston.

Mr. John L. Ogden, Chief Engineer Water Department, Philadelphia.

Dr. Guy Hinsdale, Philadelphia.

Dr. Hobart A. Hare, Philadelphia.

Mr. George E. Chambers, Philadelphia.

Mr. J. C. Green, West Chester.

Mr. Milnor Gillingham, Fallsington, Bucks county.

Mr. J. L. Heacock, Quakertown. Bucks county.

Mr. H. D. Miller, Drifton, Luzerne county.

Rev. F. B. Hodge, Wilkes-Barre.

Dr. Lewis H. Taylor, Wilkes-Barre.

Mr. William H. Dechant, Mahanoy Plane.

Mr. Joseph Bell, Franklin, Venango county.

Dr. W. H. Mercur, Pittsburgh.

Dr. William D. McGowan, Ligonier.

Prof. I. Thornton Osmond, State College.

Dr. F. Donaldson, Baltimore, Md.

Tenth Census, United States

Reports of the Chief Signal Officer, War Department

Reports of the Health Officer, Philadelphia.

Report on Mortality, U. S. A., Coolidge.

Walker's Statistical Atlas of the United States.

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## APPENDIX H.

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### LEGAL OPINIONS, JUDICIAL CHARGES AND LEGAL PROCEEDINGS.

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1. Opinion of Thomas M. McFarland, Esq., attorney to the board of health of Pittsburgh, on the Powers of Boards of Health.
  2. Opinion of Robert Snodgrass, Esq., Deputy Attorney General, on the Powers of Boards of Health.
  3. Charge of Judge Ewing, of Allegheny county, confirming the right of a Health Officer to remove a person ill with an infectious disease to the hospital.
  4. Prosecution and conviction of Daniel Kerrigan, of Rosemont, Montgomery county, for maintaining a nuisance.
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#### I. OPINION OF THOMAS M. MCFARLAND, ESQ., ATTORNEY TO THE BOARD OF HEALTH OF PITTSBURGH, ON THE POWERS OF BOARDS OF HEALTH.

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PITTSBURGH, *September 30, 1886.*

BENJAMIN LEE, M. D., *Secretary and Executive Officer, State Board of Health, Philadelphia, Pa.:*

DEAR SIR: I am in receipt of your communication of September 26, 1886, asking for an opinion on the subjects embodied in the following questions and others suggested thereby:

*First.* What are the powers of the State Board of Health to abate and remove nuisances, as distinguished from the powers of local boards of health?

*Second.* When there is a conflict of judgment or opinion between councils and boards of health as to the necessity for and right to compel the construction of a sewer, for the purpose of permanently abating a nuisance located on a public street, what are the powers of the State and local boards of health in the premises?

*Third.* On failure to abate and remove such nuisance located on a public street, what is the proper action to remedy the same?

I beg to reply as follows:

The State Board of Health is a creature of statutory law, and consequently to ascertain their powers resort must be had exclusively to the statutes creating and governing said Board.

Under the act establishing the State Board of Health their powers to enforce sanitary regulations, abate nuisances, etc., are provided for

in sections five and six of said act. There are two classes of regulations provided for in said sections. The former is general, the latter special. Section five provides, *inter alia*, that the Board "shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases."

Although this section contains a provision intended to protect the public health, no statutory remedy is prescribed for the violation thereof. That this provision of the law is imperfect or incomplete is evident, as the Legislature should have given, if so intended, explicit power designating the manner of enforcing the same, as by penalties, etc.

Section six provides that "in cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the State Board of Health shall have power and authority to order nuisances, or the causes of any special disease or mortality, to be abated and removed and to enforce quarantine regulations as said Board shall direct."

"Any person who shall fail to obey or shall violate such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars, at the discretion of the court."

There can be no doubt as to the meaning of this section and as to the manner of enforcing its provisions. In the event of the failure to obey the order of the Board, under this section, it is the duty of the Board, or its executive officer, to proceed to abate and remove the nuisance complained of and proceed by warrant, arrest and indictment to convict the party refusing or neglecting to obey the order of abatement and removal.

The State Board of Health has the general supervision of the interests of the health and lives of the citizens of the Commonwealth. While this is true, there are evidently instances where local boards or councils have ample power to abate and remove nuisances detrimental to the public health, which they fail to exercise, notwithstanding powers of this nature should be exercised rigorously and with the utmost promptness.

What are the powers of local boards of health to abate and remove nuisances?

A large number of boards of health in the State exist under the act of Assembly of May 23, 1874, commonly known as the "Wallace Act." By said act councils may grant boards of health power to abate and remove nuisances, the cost and expense of same to become a lien upon property upon or in which said nuisances may be. These and other powers are conferred by councils, and such boards cannot go beyond councils in search of additional powers. It will be observed, then, such boards are of little importance without the efficient coöperation of the municipal legislature. But all local boards do not exist by virtue of

said act of May 23, 1874. There are boards of health in the State that derive their powers directly from the Legislature. They are given express authority and power by the Legislature to manage, regulate and control the property and person of citizens to preserve the public health. They have the power to visit or enter into or upon any building, lot or ground and make examination thereof for the purpose of abating nuisances, and under certain circumstances they have the right to remove citizens from their homes. It has been held that when it becomes necessary to resort to force to carry out the order of such boards sufficient force can be used to overcome any opposition that would be made. But if more force be used than is reasonably necessary, and injury is caused thereby, then the party using that force and those aiding in it are responsible for the excess of force used or injury incurred. Although their powers to abate nuisances and the causes of them and to enforce sanitary regulations is very great, the courts never interfere with the legitimate use of their power.—*Eddy et al. vs. The Board of Health, 10 Phila. R.*

But if the State and local boards of health have power to abate nuisances and the only way to permanently abate certain nuisances located on public streets is by constructing a sewer, have not said boards the power to construct or cause the construction of a sewer under such circumstances?

Because said boards have power to abate a nuisance it does not necessarily follow that they have the authority to construct or cause the construction of sewers. It may be the construction of a sewer would give permanent relief, but may not vigilant attention in cleansing or filling up of the place complained of fulfil the requirements of the law to abate nuisances?

When, then, a nuisance is located on a public street and it becomes necessary to abate the same by means of sewerage or otherwise, but the municipality allows such street to remain in a condition detrimental to the public health, what is the remedy?

Streets are under the primary control of the Legislature and as all municipal powers are derived from the Legislature the authority of municipalities over streets depends upon their charters or the legislative enactments. Subject to the paramount authority of the Commonwealth, the regulation and control of the streets, which are the great highways of the city, belong to the city government.—11 *Wright, 314.*

A power to construct sewers, given to a municipal corporation by statute, does not impose upon the corporate authorities an obligation to exercise the powers conferred.—11 *Casey, 324.*

A writ of mandamus will be granted against municipal corporations and their officers whenever they refuse or unreasonably neglect to perform any duty clearly enjoined upon them by charter, statute or law, and there is no other specific legal remedy adequate to enforce

the right of the public, or the specific legal right of the relator.—*Dillon on Municipal Corporations.*

Official discretion, however, cannot be judicially interfered with by mandamus. While it is true streets are under the control of councils representing the municipality I find no law providing that councils are compelled to construct or cause the construction of sewers. In other words, the construction of sewers being discretionary, the courts will not interfere by a writ of mandamus to compel that to be done which is not by the law mandatory.

But a municipal corporation is liable to indictment where it has the power and neglects to do that which the common good requires, as for allowing the streets to remain in a filthy condition. A municipal corporation has no more immunity from an indictment for such an offense than an individual, and any use of its property that creates a nuisance, either to public or individual rights, is indictable or actionable precisely the same as though done by an individual.—*Woods on Law of Nuisances.*

The People *vs.* The Corporation of Albany, 11 Mendell 539, is a case in point. The mayor, alderman and commonalty of the city of Albany were indicted for neglecting to remove a nuisance, they being charged with permitting and suffering a basin to be foul, causing noisome and unwholesome smells, thus creating a common nuisance.

The counsel for the corporation requested the court to charge that an indictment for a nuisance could not be sustained against the defendants in their corporate capacity for acts of omission and that if it had been shown that it was the duty of the corporation to abate and remove the nuisance, the individual officers to whom that duty appertained ought to have been presented, and not the corporation. The court of general sessions refused so to charge the jury, but, on the contrary, delivered their opinion that if the jury were satisfied of the nuisance complained of, the corporation were liable to be convicted. The defendants sued out a writ of error and the case was argued before the Supreme Court of Judicature; which court held that "an indictment and an information are the only remedies to which the public can resort for a redress of their grievances in this respect."

Whenever citizens refuse or neglect to proceed in the name of the Commonwealth against public authorities for maintaining a public nuisance, because of fear or local pride, the State Board of Health, or its executive officer, could certainly accomplish great good by being the means of instituting prosecutions, through the inspectors of said Board.

Even if a nuisance be cognizable by a board of health such fact does not exclude procedure by indictment.

My conclusions therefore are :

*First.* That the power of the State Board of Health to enforce general regulations of said Board, under said section five, by penalties, is incomplete and will, at least, be doubtful until judicially passed upon



*Second.* That said Board can, without doubt, under said section six abate and remove nuisances where there is no local board of health or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative.

*Third.* That neither the State Board of Health nor local boards of health have the legal power to construct or cause the construction of sewers.

*Fourth.* That the municipality, through councils, has exclusive control of streets and is responsible for their condition.

*Fifth.* That the most efficient proceeding to remedy or abate a nuisance arising from streets being in a filthy condition is to indict the municipality for maintaining a public nuisance, and should conviction follow the court would not only have power to punish by fine, but where the nuisance shall be in existence at the time of conviction, and the sentence to direct the same be abated. Such prosecution would be under the direction of the district attorney of the proper county.

*Sixth.* As the providing of sewerage is discretionary on the part of the municipal corporation, the corporation is not liable to a civil action for failing to provide sewerage; but if the corporation allows the streets to be or remain in a filthy condition, and neglects to do that which the common good requires, that is to abate or remove the nuisance arising therefrom, and a special injury has been sustained by any citizen, he, also, has his remedy which would be by an action at law.

Respectfully submitted.

THOS. M. McFARLAND.

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II OPINION OF ROBERT SNODGRASS, ESQ., DEPUTY ATTORNEY GENERAL, ON THE POWERS OF THE STATE BOARD OF HEALTH.

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COMMONWEALTH OF PENNSYLVANIA,

OFFICE OF ATTORNEY GENERAL,

HARRISBURG, *Harrisburg, July 23, 1886.*

DR. BENJAMIN LEE, *Secretary State Board of Health, No. 1523, Pine Street, Philadelphia:*

DEAR SIR: I am in receipt of your communication of the 25th ult., to the Attorney General, with inclosures relating to certain questions submitted to your Board by the board of health of the city of Altoona. In the absence of the Attorney General, who is in Europe, I have carefully examined the matter in question and beg to reply as follows:

Boards of health organized and existing under the act of May 23,

1874, commonly known as the "Wallace act," derive their powers almost wholly from councils operating under authority of that act.

It follows, therefore, that such boards without the coöperation of councils, in their legislative capacity, cannot possibly answer the purposes of their creation. In other words, a local board of health is of little use in regulating sanitary affairs, without the hearty and efficient coöperation of the municipal legislature.

The Altoona board finds itself in antagonism with the city councils, which either neglect or refuse to coöperate with them, and they now desire to know whether they can compel and enforce such coöperation as is necessary to a proper discharge of their duties. This is the question which I understand you desire to have decided.

The desired action of councils is purely legislative in its nature. It involves the establishment of grades of streets and the regulation of gutters, sewers, &c., subjects which are exclusively within the control of councils, as the legislative department of the municipal government. But a mandamus will not lie against a legislative body in respect to its legislative functions.

This is well settled and it follows that the Altoona councils cannot be compelled to act legislatively no matter how necessary such action may be to enable the board of health to discharge its functions. So far therefore, as your inquiry relates to a direct compulsion of councils to do the things desired, I am of the opinion that there is no remedy available to the Altoona board, under the facts as presented in the papers before me, and this remark applies to your board as well.

It is plain, however, that a very serious nuisance, for which some one is responsible, exists in that city. Whether that responsibility rests upon the city councils or upon the individual property owners so as to make either criminally responsible for maintaining a nuisance I am not called upon to decide. That duty rests with the district attorney of Blair county, who might very properly be consulted in reference thereto. Certain it is, that some one ought to be responsible for thus endangering the health of the city, and whoever it may be ought to be prosecuted criminally if no other or more effectual remedy exists.

If the situation should become so serious as to warrant the interference of your Board under the six Section of the act of June 3, 1885, I think you have ample authority to order the nuisance in question to be abated, and any failure to obey your order in that regard would subject the persons so disobeying to the penalties prescribed by that section. This would of course be cumulative to any prosecution which might be instituted under the direction of the district attorney.

The questions which your communication has suggested are very serious ones, and open up substantially a new field of inquiry. To point out a sure and safe remedy which would be certain to secure

the results desired could hardly be expected of this department. Hence whilst clear in the opinion that city councils cannot be compelled in the ordinary sense of the word, to perform a *legislative* duty, I can only suggest such other remedies as appear to fairly lie in the facts presented.

The results would ultimately depend upon the courts and the construction which they might put upon the criminal and sanitary statutes in question. In any event, however, I am warranted in saying that this department will cheerfully and effectually coöperate with your Board in sustaining such course as you may deem proper to pursue in the premises.

Very respectfully,

ROBERT SNODGRASS,  
*Deputy Attorney General*

### III. CHARGE OF HIS HONOR, JUDGE EWING, OF ALLEGHENY COUNTY, CONFIRMING THE RIGHT OF A HEALTH OFFICER TO REMOVE A PERSON ILL WITH AN INFECTIOUS DISEASE TO A HOSPITAL.

*In the Court of Common Pleas No. 2, of the county of Allegheny*

JULIUS WAGNER

*vs.*

CROSBY GRAY, W. SNIVELY, M. D., C. LANGE,  
M. D., A. E. CARROLL, JOHN J. WALKER,  
FRANK C. O'BRIEN, WILLIAM C. McCORD,  
W. J. WILLEY, CHARLES HAVIS and W. S.  
BROBECK.

No. 378, July term  
1882.  
Trespass, *vi et armis*  
Plea, not guilty.

Damages claimed, twenty-five thousand dollars.

Burleigh & Harbison and Thomas M. Marshal, attorneys for plaintiffs.  
Thomas M. McFarland and Jacob F. Slagle, attorneys for defendants.

December 4, 1883, case on trial list and jury sworn.

December 5, 1883, verdict for defendants.

Following is the charge of his Honor, Judge Ewing :

GENTLEMEN OF THE JURY : The plaintiff, Julius Wagner, has brought suit against Crosby Gray *et al.*, to recover damages for alleged trespass on his house and property and injury to himself, wife and infant child. At the close of the testimony he took a non-suit as to Snively, Frank C. O'Brien and John J. Walker, leaving the other defendants. It is a case in which the verdict, if the testimony warrants it, may be rendered against one or two or three, or any number of

defendants, and in favor of the others. It is not necessary, in a case of this sort, that a verdict should be rendered in favor of the plaintiffs as against all the defendants, or none. It may be against any one of them or more than one.

It seems that in May, 1882, the plaintiff, with his wife and three small children, were living in two rooms, one above the other, in a part of a building in a court running from Spring alley towards Penn avenue, near Thirteenth street; that one of the children, the child in question, was taken sick on the 12th. Dr. Lange was sent for, and having examined the patient gave some prescription, being unable at the then stage of the disease to determine what it was. He went away and came back the next day, Saturday, the 13th, when the disease had developed so far as to enable him to say that it was small-pox and so informed them. It seems that two or three offers were made to remove the child to the small-pox hospital that the city has provided. One on Saturday evening and another on Monday or Tuesday. There was no attempt to forcibly remove the child at that time. On Wednesday the child was forcibly taken. It was taken from the custody of the parents and removed to the small-pox hospital.

I do not deem it a matter of very much importance in this case as to whether or not the plaintiff had consented on previous occasions to the removal of the child, as alleged by the defendants, Dr. Snively and Mr. Gray. We might assume that that is correct; they seem to have acted on that assumption, as the ambulance was sent to take away the child apparently upon the supposition that it would be given up. Nor do I deem it a matter of very much importance in this case as to whether or not the parents, the plaintiff, or the plaintiff and his wife, one or both, may have consented to the removal of the child on Wednesday; because before the child was removed they did forbid it to be removed and unless it was legally removed a previous consent would not be binding. And if, under the circumstances, the parents had a right to forbid the removal, they would have that right up to the time there was a removal.

The case is one to excite sympathy; and it is revolting to the impulses of human nature and of affection to have a child taken away from the custody of its parents against their will or against the will of either of them, and especially that it should be taken away from the mother. We very naturally sympathise with the parents in a case of this sort. The fact that a young child has died of a serious disease and died away from home, is another thing in regard to which all men very naturally feel sympathy and feel that it is a great hardship on the parents, and, perhaps, are rather ready to find that some wrong had been done.

The case for the court and jury is one, though, that requires careful, calm consideration of the facts and circumstances of the case and of the law governing the case.

Ordinarily the parent has a right to the absolute control and custody of the child. That right may be forfeited by the misconduct of the parent when the law will take away that control. Ordinarily a man has a right to control his own house and premises and to forbid any person to enter and to order them out and to compel them to go. Circumstances may be such, though, that that right ceases. When men and women congregate in large cities, in a civilized community, they necessarily give up some of the rights of property that they would have in a less thickly settled community. The public convenience, the public safety and public health, require regulations in a city that interfere with a man's use of his property in a way that would be illegal in a country district where a man owns a large farm and has nobody around him to be interfered with by any use that he may make of his property. In the same way the wide liberty and rights of person that men have when in a sparsely settled community may be abridged when they come into a large city. Some of those rights have to be yielded to public safety. And among the things that the public has a right to control and look after in the way of its safety, is the public health. In all civilized countries the right of the public authorities to interfere with the acts and the mode of living and the use of property of private citizens, where they endanger the public health, is now recognized, and recognized especially where there is danger of serious epidemics of contagious diseases. It is essential for the public safety that there should be power lodged in the municipality to manage and control such affairs in order to preserve the public health.

Small-pox, as you all know, is recognized as one of the most highly contagious diseases, perhaps the most loathsome disease, and one of the most dangerous diseases, the greatest scourge to which the human race is subject in modern times; until vaccination had been discovered, it was perhaps more feared than any other disease to which the human race is subject.

The Legislature has given to the city of Pittsburgh, by express authority, power to manage, regulate and control the property and persons of citizens to preserve the public health and especially to preserve it from the dangers of contagious diseases. That power has been lodged in a body known as the board of health. The proof is, and it is conceded, and there is no suggestion to the contrary, that the defendants, with the exception of Dr. Lange, were officers of the board of health, undertaking to act as such in the acts that they performed. If they performed their duties within the limits of the law, and in accordance with the law, then they are not liable in this action for any injury that may have resulted to the plaintiff. If they did not and injury resulted, they are liable.

The act of Assembly passed in 1872, regulating these matters pre

scribes the duties to be preformed by practicing physicians in the city. (Court reads section six, of the act.)

Under the provisions of this act it was the duty of Dr. Lange, having a patient laboring under small pox, to forthwith report it to the board of health. If there had been no such act it would have been his duty as a citizen so to do. Dr. Lange did, according to the undisputed evidence, make a report of this case to the board of health on Saturday, the day that he ascertained what the disease was. In addition to that he made a recommendation that the patient be removed, giving his reasons therefor.

The act of Assembly further imposes a duty on the officers of the board of health. (Court reads section third of the act.)

Under this act it was the duty of Crosby Gray, the health officer, to go and examine this case as is prescribed by the act. Whether that was a prerequisite to his ordering a removal, though, is a very different question. It seems that Dr. Snively, physician to the board of health (certainly a man of large experience with small-pox and who ought to be skillful whether he is or not), visited the premises on Tuesday and made an examination, and he returned and gave his advice or directions for the removal of this patient.

The most serious question of law, it seems to me, that arises in this action is, as to whether or not it was essential for the health officer, before ordering a removal, to himself "visit and examine" this sick person. Mr. Gray says he "was familiar with the locality," he says he has been health officer for fourteen years. He had the certificate of the two physicians. He had the statement of the father. There was no question that the child had small-pox. On reading the act carefully I have come to the conclusion that it was not necessary to the removal that the health officer should himself, in person, have visited the premises. The act does not appear to put the removal as a matter of his discretion. It is the order, the advice of the physician of the health board, and the attending physician, that is to be followed. *They are the judges, and not the health officer or the inspector, as to the propriety and necessity of the removal.* And while I think, outside of this question of law, in any case that a removal is ordered against the will of the parties, the health officer ought to visit the patient himself, and if he believes it is not proper to remove, to endeavor to get some change of opinion from the doctors, still I don't think it is essential. I therefore instruct you that having the order and advice of the physician to the board of health and of the attending physician, it was his province then, and his right, to order the removal of this patient to the small-pox hospital.

In regard to Dr. Lange. The evidence (that is legal evidence, as against him), is that he made this report on Saturday, the day that he found that the patient was suffering from small-pox. And that

that was all the communication that he had with the board, or connection with it. There is no proof to the contrary. The alleged statements of the parties who went to remove the child that Dr. Lange was troubling them about it is not evidence against him. It might have turned out by connecting evidence that it was; but, standing alone, it is not legal evidence against him. Taking the admitted facts of the case, the situation of this family in their crowded quarters with two children subject to small-pox, one of them vaccinated at about the time (the doctor says after this other child had the small-pox), and another one unvaccinated; and the crowded court, with the uncontradicted evidence that we have here of the yard, bake oven and the water-closet used in common by those families and the thick settled neighborhood, I don't hesitate to say that Dr. Lange was acting simply in the performance of his duty when he recommended the removal of that patient, and there is no evidence from which the jury would have any right to infer malice from the action of Dr. Lange, and, therefore, I instruct you that your verdict must be in his favor.

Dr. Snively simply performed his duty in the premises, and the only thing I would have to say is that if fault is to be found with him it is for the want of prompt action. I very strongly suspect that the prevalence of small-pox in this city at different times for some years past, is largely due to a want of promptness and decision on the part of health officers in completely and thoroughly isolating the patients when they find that they have small-pox, and making removals as they should do. They undertake to excuse delay by alleging that the danger of contagion, of inoculation, is much less in the early stages of small-pox than afterwards; that the great danger is some days after the eruption breaks out. And I very strongly incline to think that the authorities should have taken the suggestion of Dr. Lange to say that the patient was removed "that day," or at an early day. Whatever their relation might be, as between Mr. Wagner and Dr. Lange, for the purposes of this case and the intendment of this act of Assembly, Dr. Lange is to be considered the attending physician. He had attended the case. He was the only one that had charge of it, and he was the proper one to make the report to the board of health, and he was bound to do it. And that being done, it was the duty of the health officer to have the patient removed when the physician to the board of health ordered it.

I am unable to see any evidence in the case that would justify the jury in finding that Crosby Gray was guilty of any malice or any improper conduct in this case. I do think, as I said before, that he should himself have gone out and looked at the case; but I don't see that he could have come to any other conclusion than that the patient ought to be removed.

That disposes of all the defendants, except those who were there to carry out the orders to remove. The order to remove the patient

having been given, and as we have taken the authority to say, properly given, it was the duty of these officers to obey it. They were bound to carry out this order, though in a reasonably careful and cautious manner. Having gone there for the performance of this duty it was proper to take a sufficient force to overcome any opposition that would be made, and to overcome it in a way that would not likely lead to serious results. As when force has to be used by public authorities it is very important that they have sufficient force to carry out their orders. An insufficient force is very likely to result in injury to one party or the other. They had a right to enter the house. They would have the right to enter forcibly, if necessary. When there, when they were refused permission to take away the child, they had a right to use the necessary force to restrain the parties from preventing them from taking it away, and for the use of that force they are not responsible. If by improper resistance anyone was injured by the necessary force used to overcome that resistance, that party so injured must abide the consequences. If, however, more force was used than was reasonably necessary, and injury was caused thereby, then the party using that force and those aiding him in it are responsible for the excess of force used or injury incurred. And that is a question for the jury. If there was, and if the child was injured by unnecessary force and any damage that resulted to the father from that, the party using the force is responsible for that injury.

In coming to your conclusion on this subject, however, you will take into consideration all the facts and circumstances in the case and start with this assumption, that they were in the performance of their duty; that they were resisted in the performance of their duty, and that they had a right to overcome that resistance by the necessary force, to do it safely to the party resisting, safely to themselves and safely to the child. The presumptions are that they performed their duty, and the testimony should be clear and satisfactory to you before you conclude that they went beyond that; and if they did, they are liable in damages to plaintiff, for any damages that he suffered or any injury to his person or indignity that was unnecessary, or any injury to his wife that caused him pecuniary loss, (her suffering he could not recover for, the wife herself must bring action for that.) For any damage that he suffered by reason of undue violence to the child he is entitled to recover.

As to the testimony, I shall not comment upon it. It is for you. You will render the verdict that you think the testimony warrants, under these instructions.



#### IV. REPORT ON THE TRIAL AND CONVICTION OF DANIEL KERRIGAN, OF ROSEMONT, FOR MAINTAINING A NUISANCE.

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At the last meeting of the Board the secretary presented a report on the occurrence of cases of typhoid and malarial fevers at Rosemont, Montgomery county, attributed to bad drainage, filthy pig-sties, etc., detailing the steps which he had taken for the abatement of alleged nuisances. The offender, Daniel Kerrigan, was arrested and placed in the Norristown jail. His filthy hovel and pig pen combined were torn down and burned, the manure and garbage on the premises were carted away, his pigs and cows were removed and the ground first disinfected with chloride of lime and then covered with fresh earth to a depth of several inches, which again was strewed with a liberal dose of lime. The nuisance was, therefore, most effectually abated. The procedure was as novel as it was summary and rigorous, naturally excited much interest and not a little unfavorable criticism. It was, therefore, a matter of grave moment to the Board that it should be sustained by the court. Had this first prosecution failed, the prestige of the Board would have been seriously impaired, and it would have taken years to establish its lawful authority. It was, therefore, deemed expedient to employ private counsel to assist the district attorney, Mr. John W. Bickel, of Norristown, in the management of the case. The gentleman selected was Mr. H. K. Weand, of Norristown, and the Board has reason to congratulate itself on securing his valuable and energetic coöperation.

The trial took place on Tuesday, December 8, at Norristown, before Judge Boyer. The Secretary appeared first before the grand jury, and at once found a true bill. The defense was evidently backed by the pecuniary influence of considerable strength, and was conducted by two well-known members of the Norristown bar. The witnesses for the prosecution were the secretary, Dr. Atkinson, of Philadelphia, medical inspector to the Board; Drs. Powell and Egbert, of Rosemont and Bryn Mawr; Messrs. Hipple, Fuguet, French and Egbert, residents of Rosemont; Mr. Kennedy, inspector to the board of health of Philadelphia; Mr. John Whiteman, the constable who superintended the abatement of the nuisance. The trial continued on the day following, and, withstanding a stubborn and skillful defense resulted in a verdict guilty. The sentence was an imprisonment of one month. As the trial terminated the Secretary served a notice on the offender forbidding him to keep pigs upon the premises. The expenses of the prosecution were met by contributions from residents in the neighborhood.

BENJAMIN LEE, *Secretary*

APPENDIX I.

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COMPENDIUM

OF THE

Laws Relating to Public Health and Safety

OF THE

STATE OF PENNSYLVANIA,

TOGETHER WITH

The Decisions of the Supreme Court and County  
Courts Relating Thereto.

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*Compiled for the State Board of Health.*

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HARRISBURG:

EDWIN K. MEYERS, STATE PRINTER.

1888.



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# COMPENDIUM OF SANITARY LAWS.

## I. STATE BOARD OF HEALTH.

To establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth.

1. The Governor, by and with the advice and consent of the Senate, shall appoint six persons, a majority of whom shall be physicians of good standing, graduates of regularly chartered and legally constituted medical colleges, and of not less than ten years' experience in the practice of their profession, and one of whom shall be a civil engineer, who, together with the secretary, the mode of whose appointment is hereinafter provided for, shall constitute and be designated as the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Of the six persons first appointed, two shall serve for two years, two for four years, and two for six years from the first day of July next following their confirmation; and the Governor shall thereafter biennially appoint, by and with the advice and consent of Senate, two persons of the same professions as those whose terms of office have just expired, to be members of said board to hold their offices for six years from the first day of July next following their confirmation, and until their successors are appointed excepting the secretary who shall continue in office as hereinafter provided, but any member may be reappointed. Any vacancy occurring in said Board during a recess of the Legislature shall be filled by the Governor until the next regular session of the same.

2. As soon as possible after the appointment of the first six persons, as aforesaid, they shall meet in the office of the Secretary of the Commonwealth, and shall proceed, under the direction of the latter officer, to determine by lot which of them shall serve for the respective terms of two, four, and six years. Before entering upon the duties of the office, they shall take the oath prescribed for State officers by the Constitution of the State, and shall file the same in the office of the Secretary of the Commonwealth, who, upon receiving the said oath of office, shall issue to each a certificate of appointment for his respective term of office determined as aforesaid; upon receiving which they shall possess and exercise the powers, and perform the duties, of said Board as defined in this act. Immediately after

3 June, 1885 § 1.  
P. L., 55.  
P. D., 2215.

Governor to appoint and Senate to confirm State Board of Health. Qualifications of members.

Terms of the members fixed.

Governor to appoint members biennially.

Fixed term.

Vacancies during recess to be filled by the Governor.

Ibid, § 2.

Manner of organization.

2 June, 1885.

Appointment of  
secretary.

Actual expenses of  
members to be  
paid.

Ibid, § 2.

Duties of secre-  
tary.

Salary of secre-  
tary.

Ibid, § 4.

Time and place of  
meetings.

Ibid, § 5.

Duties and func-  
tions of Board de-  
fined.

having taken the oath of office. they shall organize by electing one of their number to be president, and by appointing a proper person, who shall be a physician of good standing, of not less than ten years' professional experience. and a graduate of a legally constituted medical college, to be secretary of said Board, who shall hold his appointment until removed by the appointment of his successor or otherwise. The Board may elect one of its own members secretary, in which case the vacancy thus created shall be filled by the Governor in the same manner as a vacancy caused in any other way. The president shall be elected annually. No member of the Board, except the secretary, shall, as such, receive any salary; but the actual traveling and other expenses of any member, while engaged on the actual duties of the Board, shall be allowed and paid on presentation to, and approval by, the Auditor General of an itemized account with vouchers annexed.

3. The secretary shall be the executive officer of the Board, and shall have all the powers and privileges of a member of said Board, except in regard to voting upon matters relating to his own office and duties as secretary. He shall receive an annual salary of two thousand dollars, which shall be paid him in the same manner that salaries of other State officers are paid; and such necessary expenses as the Auditor General shall audit, on presentation of an itemized account with vouchers annexed and the certificate of the Board, shall be allowed him.

4. The said Board shall meet at least once every six months, and may also hold special meetings as frequently as the proper and efficient discharge of its duties shall require, in the capitol building at Harrisburg (unless otherwise ordered), and the rules and by-laws of the Board shall provide for the giving of proper and timely notice of all such meetings to every member of the Board. The Secretary of Internal Affairs shall provide and furnish such apartments and stationery as said Board may require in the discharge of its duties. A majority of the members of the Board shall, at any regular, called, or adjourned meeting, organize and constitute a quorum for the transaction of business.

5. The State Board of Health and Vital Statistics shall have the general supervision of the interests of the health and lives of the citizens of the Commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of disease and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine, on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the Legislature, and at such other

times as it deems it important, institute sanitary inspections of public institutions or places throughout the State. It shall codify and suggest amendments to the sanitary laws of the Commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases.

2 June, 1895.

6. In cities, boroughs, districts, and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the State Board of Health shall have power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed, and to enforce quarantine regulations, as said Board shall direct.

Ibid, § 6.

Powers of Board in absence of local boards.

Any person who shall fail to obey, or shall violate, such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars at the discretion of the court.

Penalty for violation or neglect.

7. It shall be the duty of the State Board of Health and Vital Statistics to have general supervision of the State system of registration of births, marriages, and deaths, of prevalent diseases, and of practitioners of medicine and surgery, to prepare the necessary methods, forms and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the capital of the State. The said Board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The secretary of the State Board of Health and Vital Statistics shall be the superintendent of registration of vital statistics; as supervised by said Board, the clerical duties and safe-keeping of the Bureau of Vital Statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said Board shall require in the discharge of such duties.

Ibid, § 7.

Function of Board in registration.

Secretary of Internal Affairs to provide clerical assistance, stationery and apartments.

8. It shall be the duty of all health officers and boards of health in the State to communicate to said State Board of Health copies of all their reports and publications, and also such sanitary information as may be requested by said Board. And said Board is authorized to require reports and information (at such times, and of such facts, and, generally, of such nature and extent as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all places of public resort in the State; but such reports shall only be required concerning matters or particulars in respect of which it

Ibid, § 8.

Local boards of health and institutions to report to Board.



3 June, 1886.

Ibid, § 9.  
Scientific investi-  
gations.

Ibid, § 10.  
Annual report.

Ibid, § 11.  
Appropriation.

Ibid, § 12.

16 April, 1887, § 1.  
P. L., 57.

Annual report of  
State Board.

2 June, 1887, § 1.  
P. L., 296.

Expenses of State  
Board of Health.

may, in its opinion, need information for the proper discharge of its duties.

9. Said Board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service.

10. It shall be the duty of said Board, on or before the first Monday of December in each year, to make a report in writing to the Governor of this State upon the sanitary condition and prospects of the State; and such report shall set forth the action of the said Board and its officers and agents, and the names thereof, for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said Board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said Board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year.

11. The sum of ten thousand dollars (\$10,000) is hereby appropriated from the treasury for the purposes of this act and the expenditures properly incurred by the authority of said Board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the Treasurer upon the warrant of the Auditor General.

12. This act shall take effect immediately, and all acts or parts of acts inconsistent herewith shall be, and are hereby repealed.

13. Five thousand copies of the Annual Report of the State Board of Health and Vital Statistics shall be printed annually, four thousand to be bound in muslin, and one thousand in paper; seventeen hundred and fifty thereof for the use of the House of Representatives, one thousand thereof for the use of the Senate, seventy-five thereof for the use of the Governor, seventy-five thereof for the State Librarian for distribution and exchange with the States and Territories, five hundred thereof for reserve work, and the remainder thereof for exchange and distribution by the State Board of Health.

14. The following sums be and are hereby specifically appropriated to defray the expenses of the State Board of Health and Vital Statistics for two years, namely: For the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty seven, and also for the year commencing on the first day of June, Anno Domini one thousand eight

hundred and eighty-eight: For the salary of the secretary and executive officer, for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for two years, fifteen hundred dollars, or so much thereof as may be necessary. For postage, telegrams, express charges and incidental expenses, for two years, one thousand dollars, or so much thereof as may be necessary. For traveling and other necessary expenses of the members and secretary of the Board, while engaged on the actual duties of the Board, for two years, one thousand dollars, or so much thereof as may be necessary. For sanitary inspections and sanitary investigations respecting the cause of disease and control of epidemics, for two years, twenty-five hundred dollars, or so much thereof as may be necessary: *Provided*, That the secretary of said board shall make return to the Auditor General of the Commonwealth of Pennsylvania, at the end of the fiscal year, an itemized account, under oath, of the moneys appropriated under this act, or so much thereof as may be drawn from the treasury and disbursed by the said Board, with the amounts paid each of the officers and employés for each year; and unless such account is rendered, as aforesaid, no further appropriation, or other money here appropriated by this act for the year eighteen hundred and eighty-seven, shall be paid by the State Treasurer to this board until this provision is complied with.

2 June, 1887.

Secretary and executive officer.  
Clerical assistance.

Postage, &amp;c.

Traveling and other necessary expenses.

Sanitary inspections.

Secretary to make an itemized account of expenditures.

Penalty for failure to make such return.

## II. BOARDS OF HEALTH FOR CITIES OF THE FIRST CLASS.\*

### Philadelphia.

15. The board of health shall consist of nine† respectable citizens and electors of said city of Philadelphia, who shall be selected in the following manner, to wit: On the first Monday in June, A. D. 1859, the judges of the district court for the city and county of Philadelphia, shall appoint three reputable citizens and electors of said city of Philadelphia, to be members of the board of health, as constituted under the provisions of this act, one to serve one year, one to serve two years, and one to serve three years; and annually thereafter the said court shall appoint one person to be a member of said board; the court of common pleas shall, in like manner, and at the same time, appoint the same number of members of said board; and annually thereafter

7 April, 1859, § 5.  
P. L., 402.  
W. D., 10.

To consist of nine members.

To be appointed by the courts and elected by councils.

\* For classification of cities, see IV, Cities of the Third, Fourth and Fifth Classes.

† Now five, by Act 1 June, 1885, P. L., 42, B. P. D., 99.

7 April, 1850.

the said court shall appoint one person to be a member of said board; the judges of the Supreme Court of this State shall, in like manner and at the same time, appoint the same number of members of said board; and annually thereafter the said court shall appoint one person to be a member of said board; the select and common councils of the city of Philadelphia, in joint convention, at any stated meeting in June next, shall elect the same number of members of said board, one to serve one year, one to serve two years, and one to serve three years; and annually thereafter, at any meeting in June, said councils, in joint convention, shall elect one member of said board to serve three years.

*Ibid*, § 7.  
Vacancies how filled.

16. In case a vacancy occur in the said \* \* \* board of health, from death, resignation, or otherwise, it shall be supplied and filled, for the unexpired term of such member, by the court which appointed, or the councils which elected, the member thus dying, resigning, or otherwise vacating his seat in the board of which he was a member.

2 February, 1854, § 16.  
P. L., 32.  
B. P. D., 99.

17. They shall each take the usual oath of office, and enter upon the duties thereof on the first Monday in July next succeeding their election.

Time of meeting.

The members of the board of health shall meet on the morning of the first Monday in July of the same year, at ten o'clock, and on the first Monday of July in each year at the same hour, and organize into a board, and shall elect a president and such other officers as may be necessary for the proper transaction of the business of the said board; and upon such organization, shall thereby supersede the present members and officers of the board of health, and thereupon all the estate whatsoever, real, personal and mixed, that shall then be by law or otherwise vested in or in possession of the board of health, shall be forthwith vested in the city of Philadelphia, subject to all the trusts, conditions and liabilities now legally applicable thereto; and all laws of this Commonwealth creating, governing and regulating the board of health, not inconsistent herewith, shall continue in force and operation, and shall govern and regulate the board of health of the city of Philadelphia, except as to farmers manuring land and keeping stock in the strictly agricultural districts, except as the same may hereafter be altered by law or ordinance; and all sums of money due, payable to, or received by the board of health, shall be paid into the city treasury; and all sums expended by or for the purposes of the board of health, shall be paid by the city treasurer upon orders drawn upon appropriations regularly made by councils. The said board shall sit upon their own adjournment as they shall find necessary, but shall meet at least once in every day, between the first day of June and the first day of October, in every year; and also when the board shall be specially convened by order of the president or any two of the members.

Supersede present members.

All property belonging to the board to vest in the city.

Money paid into city treasury and paid out upon appropriations by councils.

20 January, 1813, § 1.  
P. L., 33.  
W. D., 11.

Daily meetings between June 1, and October 1.

18. The jurisdiction, powers, duties and authority of the board of health shall extend to and over the city of Philadelphia, the incorporated districts of the Northern Liberties, Kensington, Richmond, Spring Garden, Penn, and Southwark, and the township of Moyamensing;\* and all violations of health laws now punished, or hereafter to be punished, by fine, forfeiture, imprisonment, or otherwise, shall be prosecuted and sued for, if committed within the jurisdiction of the board, in like manner, and as fully, and to all intents and purposes, as if any of the said places had been especially named.

2 February, 1848, § 1.  
P. L., 18,  
W. D., 15.

Jurisdiction of board.

19. The president, the secretary and the chief clerk of the board of health, and the health officer of the city and port of Philadelphia, shall have power to administer oaths and affirmations in conducting the business of their respective offices, in connection with said board; and if any person or persons shall wilfully and absolutely swear or affirm falsely in taking any oath or affirmation required by such officers aforesaid, in the proper performance of their respective duties, such person or persons so offending shall, upon due conviction thereof, be subject to the pains and penalties which are by law prescribed for the punishment of wilful and corrupt perjury.

12 April, 1860, § 1.  
P. L., 854,  
W. D., 16.

Power to administer oaths given certain officers.

20. Upon conviction in any court of criminal jurisdiction of any member or members of said \* \* \* board of health of any wilful misapplication of the funds or property of the said board, or funds or property of the said city of Philadelphia, or of any fraudulent and corrupt official act, he or they so offending and convicted shall be sentenced to pay a fine of not less than one hundred nor more than one thousand dollars, and undergo an imprisonment in the county prison for a term not exceeding one year, at the discretion of the court.

7 April, 1860, § 8.  
P. L., 403,  
W. D., 11.

Penalty for any corrupt official act.

21. If any person shall wilfully and knowingly obstruct or resist the board of health, or any of the members thereof, or any person by them appointed, in the execution of the powers to them given, or in performance of duties enjoined on them by this act, and the rules and regulations of the said board, such person shall, on being thereof legally convicted, forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appropriated as is hereinafter directed. And if, after the expiration of the quarantine, any mariner or other person, who shall have complied with the regulations hereby established, shall commit any violence on the person of a member of the board of health, or any of the officers attached to the same, for anything done in the execution of his duty, such person shall be subject, on conviction thereof, to a fine of two hundred dollars, and shall also be sentenced

20 January, 1858, § 28  
P. L., 82,  
P. D., 1568,  
W. D., 12.

Penalty for obstructing board of health.

\* By the consolidation act of 2d February, 1854, P. L., 21, all these districts were merged in the city of Philadelphia.

29 January, 1818.

§ 29. P. D., 1858,  
W. D., 12.

How penalties re-  
coverable.

No citizen dis-  
qualified as wit-  
ness.

Members exempted  
from military and  
jury duty.

Ibid. § 31.  
P. D., 1858,  
W. D., 12.

Limitation of ac-  
tions.

Who liable for  
penalties.

16 March, 1855, § 9.  
P. L., 91.  
W. D., 15.

Contracts, suits,  
&c., to be in name  
of the city of Phila.

to imprisonment at hard labor for any term not exceed-  
ing three years.

22. For payment and satisfaction of all forfeitures and penalties which are imposed by this act, and all sums of money directed by this act to be paid, it shall be the duty of the health officer to sue and prosecute, and the same to collect, recover and receive, and the same shall be recoverable before any alderman, justice of the peace or court of justice having lawful jurisdiction, to the amount of such forfeitures, penalties, and sums of money respectively, or in the case, or upon the offence upon which the proceeding shall be had, and the same when recovered and received, shall be appropriated, and shall inure to the use of the institution under the management and direction of the board of health. And no citizen or inhabitant of the city of Philadelphia, the district of Southwark or the townships of the Northern Liberties, Moyamensing or Penn, shall be disqualified from sitting as judges or jurors, or from giving testimony respecting any of the offences mentioned in this act, by reason of his, her, or their common interest in the appropriation of the sum or penalties imposed for such offence, nor shall any member of the board of health, or any officer intrusted with the execution of this act, or any part thereof, be disqualified from giving testimony respecting any of the said offences. And the said members of the board of health shall, during their continuance in office, be exempted from the duties of jurors, and from militia duty.

23. All actions or prosecutions to be commenced against any master, captain, owner, or consignee of any ship or vessel, or other person, by virtue of this act, shall be brought within twelve months next after the commission of the offence wherewith he is charged, and if any action or suit shall be commenced against any person or persons, for any matter or thing committed in violation of this act, the defendant or defendants may plead the general issue, and give this act and special matter in evidence, at any trial to be had thereupon. And for the payment and satisfaction of all forfeitures and penalties which are imposed, and all sums of money directed by this act to be paid by the masters, captains, owners, or consignees, as well the ships or vessels respectively, as the captains, masters, owners, or consignees thereof, shall be and are hereby declared liable.

24. All contracts made by or with the board of health, and all recoveries of penalties and suits for other causes of action, under this and other acts to which this is a supplement, shall be in the name of the city of Philadelphia, for the use of the board of health, and nothing herein contained shall in any wise impair the authority of the city corporation over said board of health as one of the departments of said city.

25. The provisions of the twentieth and twenty-first sections of the act of April 21st, 1855, entitled "A supplement to the act consolidating the city of Philadelphia," are hereby extended to the board of health and board of guardians of the poor. No contract made by either of the said boards shall be binding upon the city unless a warrant therefor shall be issued and countersigned in such manner, and by such officers as councils may, by ordinance, prescribe, and such officer shall give bond to the city of Philadelphia in such amount, and with surety as shall be approved by councils, conditioned for the faithful performance of the duties imposed upon said officer, by law or ordinance, and that he will not countersign any warrant upon the city treasurer, except such as may be authorized by law or ordinance, and within the appropriations made by councils. \*

12 April, 1855, § 2.  
P. L., 336,  
W. D., 15.

No contract binding without warrant duly issued.

26. The board of health of the city of Philadelphia, shall have, for the collection of all debts due the department of health of the city of Philadelphia, all the powers now conferred upon the receiver of taxes of the city of Philadelphia for the collection of delinquent taxes, by the act entitled "An act to incorporate the city of Philadelphia," approved the second day of February, A. D. 1854, and all the supplements thereto: *Provided*, That nothing herein contained shall be so construed as to authorize any collector or collectors to collect any commission, fee, or charge, for the board of health of the city of Philadelphia.

16 April, 1855, § 1.  
P. L., 945,  
W. D., 18.

Powers for the collection of debts.

27. No debt, charge or assessment for work hereafter done or materials furnished by or under the authority of the board of health, or any municipal corporation, shall be a lien on real estate for more than six months from the time of doing such work, unless a claim for the same shall be filed in the office of the prothonotary of the proper county within that time, nor shall the same continue a lien longer than five years from the time of filing the claim, unless revised by *scire facias*, in the manner provided by law in the case of mechanics' claims. †

16 April, 1845, § 2.  
P. L., 423,  
P. D., 1203.

28. Whenever any penalty given by law to the board of health is not fixed and definite in amount, but varies at the discretion of the court, the same shall in such cases be collected and recovered only by indictment.

3 February, 1848, § 2.  
P. L., 18,  
P. D., 1559.

Where penalty indefinite in amount recoverable only by indictment.

\* Under the act 18 March, 1869, P. L., 397, the finance committee of councils had power to supervise the awarding of contracts by the board of health; the powers conferred by act 23 May, 1874, P. L., 233, not having yet been exercised. *McCafferty v. Steel*, 12 Phila., 236. The power of opening proposals and awarding contracts is now exercised by the board of health independent of the committee of councils. See B. P. D., 108, n.

† The lien of a municipal claim expires at the end of five years, unless a *scire facias* thereon be prosecuted to judgment within that period. *Phila. v. Scott*, 93 Penn. St., 25, and can only be preserved by a revival within each recurring period of five years. *Church v. Sunderland*, 16 W. N. C., 392; *Church v. Phila.*, 108 Penn. St., 466. See B. P. D., 788, n.

Unless filed within six months from the completion of the work, no lien is created. *Pittsburgh v. Knowlson*, 92 Penn. St., 116; *Kaiser v. Weiss*, 85 Penn. St., 366; *Lofink v. Allegheny*, 5 W. N. C., 46; P. D. 1203, n.

20 March, 1882, § 5.  
P. L., 172.  
W. D., 15.

Guardians of the poor to repay to board of health expenses of pauper inmates of hospital.

January 29, 1818, § 25.  
P. L., 82.

Physicians in Philadelphia to report all contagious cases to health officer.

20 March, 1824, § 2.  
P. L., 125.  
W. D. 14.

Inoculation of small-pox not permitted without special permission of board of health.

Penalty.

1 June, 1885, Art I, § 1.  
P. L., 27.  
P. D., 2281.

"Bullitt" Bill.

Art. III, § 1.

Police affairs and public health.

29. Whenever, in the judgment of the board of health, any person afflicted with any contagious or infectious disease, and received for treatment in their hospital, shall be unable to pay the expenses of his attendance and treatment there, it shall be the duty of the guardians for the relief and employment of the poor of the city of Philadelphia \* \* \* to repay to the board of health all the expenses incurred in and about the attendance and treatment of such person, according to the rates to be fixed by the said board of health, and in case of his or her death, to repay also the cost of interment: *Provided*, That the charge for board and attendance shall not in any case exceed the rate of three dollars per week.

30. Every person practicing physic in the city, districts and townships aforesaid, who shall have a patient laboring under a pestilential or contagious disease (measles excepted), shall forthwith make a report in writing to the health officer, and for neglecting so to do, he shall be considered guilty of a misdemeanor and subject to a fine not exceeding fifty dollars.

31. No practicing physician, or other person or persons, shall be allowed to communicate the infection of small-pox, by inoculation or otherwise, within the jurisdiction of the board of health, unless by special permission of said board, and any practicing physician, or other person or persons so transgressing, shall be liable to a penalty not exceeding one hundred dollars, nor less than seventy, for each person so inoculated or infected as aforesaid, to be recovered and appropriated as directed by the act to which this is a supplement.

32. The board of health shall be invested with the same authority to make such general rules, orders or regulations for the preservation of the district from the contagion of smallpox as they already possess in relation to other contagious diseases dangerous to the health of the community.

33. [This act, known as the "Bullitt" Bill, for the government of cities of first-class, applying at present only to Philadelphia, went into effect the first Monday of April, A. D. 1887, and provides (Sec. I, Cl. V.,) that the Mayor shall be *ex-officio* a member of all boards, except that of "building inspectors." The board of health is incorporated into the Department of Public Safety, as follows:] The department of public safety shall be under the charge of one director who shall be the head thereof.

34. The care, management, administration and supervision of the police affairs and all matters relating to the public health, to the fire and police force, fire alarm telegraph, erection of fire escapes and the inspection of buildings and boilers, markets and food sold therein, shall be in charge of this department.

35. In cities of the first class the board of health shall continue with the powers and duties now vested in it

by law, but the members thereof shall be five in number, to be nominated by the mayor and confirmed by the select council, for the period of three years. The present members thereof shall serve until the expiration of their terms of office respectively, but when their number shall be reduced below five, then the mayor shall nominate persons to fill the vacancies resulting therefrom so that the number shall be always five, but the board of health shall be attached to the department of public safety.

36. The director of public safety shall *ex-officio* be a member and president of the board of health, and as chief executive officer thereof, subject to the resolutions and orders of the said board, appoint, supervise and control all the subordinate officers and employes attached to the board.

37. The department of charities and correction shall be under the charge of a president, who shall be the head thereof, and four directors, to which department shall be confided the care, management, administration and supervision of the charities, almshouses, hospitals, houses of correction and all other similar institutions, the control or government of which is intrusted to the city: *Provided*, That no part of this section shall interfere with the Municipal Hospital or Lazaretto as now under the control of the board of health, or with the functions of any board of directors of city trusts now existing, created by any acts of Assembly of this Commonwealth.

1 June, 1885.

Board of health to consist of five members nominated by the Mayor.

To be attached to the department of public safety.

Art. X, § 1.

Charities and correction.

Municipal hospital and lazaretto to continue under the control of the board of health.

### III. CITIES OF THE SECOND CLASS.

#### Pittsburgh.

38. [This act, for the government of cities of the second class, contains similar provisions to those of the act of 1 June, 1885, P. L., 37, for cities of the first-class.]

39. There shall be the following executive departments, the heads of which shall be chosen by city councils: I. Public Safety. II. Public Works. III. Charities.

40. The care management, administration and supervision of the police affairs, and all matters relating to the public health \* \* \* shall be confided to the department of public safety.

41. \* \* \* Sewerage and drainage, and all matters and things in any way relating to the highways, shall be under the direction of the department of public works.

42. To the department of charities shall be confided the care, management, administration and supervision of the charities, almshouses and hospitals and all other

14 June, 1887.  
P. L., 305  
P. D., 2232.

Ibid § 4.

Executive departments.

Ibid, § 15.

Public health in hands of department of public safety.

Ibid, § 16.

Sewerage and drainage.

Ibid, § 17.

Hospitals.



14 June, 1857.

25 May, 1868 § 1.  
P. L., 44.Physicians to make  
immediate report  
of contagious dis-  
eases.

Penalty.

Ibid. § 2.

How penalty re-  
covered.

Ibid. § 3.

Board of health to  
institute proceed-  
ings.Board of health of  
Pittsburgh.

similar institutions, the expenses of which are paid out of the city treasury.

**43** Every practicing physician in cities of the second class, who shall have a patient suffering or affected with small-pox, (variola or varioloid), diphtheria, scarlet fever, typhoid fever, typhus fever, yellow fever, cerebro-spinal fever or Asiatic cholera, shall forthwith make report thereof to the board of health, describing the street, number and locality of the house or place where the said patient may be located, and for neglecting or refusing so to do, shall be liable to a fine of not less than five nor more than fifty dollars.

**44.** In all cases of the breach of any of the provisions of this act, subjecting the offender to a penalty or fine therefor, the suits for the recovery thereof may be maintained before any mayor, deputy mayor or alderman in like manner as suits for the recovery of debts may now be maintained before them. and upon non-payment thereof a *capias ad satisfaciendum* may issue.

**45.** All proceedings for the recovery of the fines and penalties imposed and inflicted by the provisions of this act shall be instituted and carried on by the board of health, and in its name and for the use of said board.

**46.** [The Board of Health of the city of Pittsburgh, consisting of nine members, was established by act of 8 April, 1851, P. L., 587, similar in its provisions to those relating to Philadelphia; and investing the board with full sanitary powers, including quarantine laws and the erection of a lazaretto. It has been supplemented as follows; Acts of 8 April, 1852, P. L., 287; 29 March, 1856, P. L., 183; 16 April, 1869, P. L., 1106; 25 February, 1870, P. L., 250; 16 April, 1870, P. L., 1194; 27 February, 1872, P. L., 168; 12 April, 1872, P. L., 1121; 21 April, 1873, P. L., 819. The act, 16 April, 1870, refers especially to registration and interment; that of 12 April, 1872, to the quarantine and lazaretto.]

#### IV. CITIES OF THE THIRD, FOURTH AND FIFTH CLASSES.\*

23 May, 1874 § 46.  
P. L., 257. P. D.,  
1234. As amended  
11 April, 1878, P.  
L., 24.

**47.** The city councils of any city of the third, fourth and fifth classes, in which there does not now exist a board of health organized according to law, shall have power to create a board of health as hereinafter provided, and confer upon it any of the following powers:

\* By this act, 11 April, 1876, § 1, P. L., 20, P. D., 2039, the cities of this Commonwealth were divided into five classes:

1. Population of three hundred thousand or over.
2. Between one and three hundred thousand.
3. Between thirty and one hundred thousand.
4. Between twelve and thirty thousand.
5. Less than twelve thousand.

48. The board of health shall be composed of five members, and shall be constituted as follows: The mayor of such city, who shall be president *ex officio*, and four to be appointed by council; the term of office of said members shall be two years, except that those first appointed shall be classified by councils as follows: two to serve for two years and two to serve for one year, so that their terms shall expire in one and two years; the members of said board shall serve without compensation; the mayor shall call the first meeting and organize the board of health by taking the chair as president.

49. A majority of the whole number of members shall be a quorum; they shall have power to appoint a health officer, a clerk, as many ward or district physicians as they may deem necessary for the proper care of the sick, poor and such other persons as are needful, and to define their duties and salaries before their appointment; all such appointees shall serve during the pleasure of the board; all fees received by them in their official capacity shall be paid into the city treasury monthly.\*

50. Councils may grant such board power to abate and remove all and every nuisance in such city and assess the cost and expense of the same upon the property, which assessment, when duly certified by the president of the board to the city controller, shall become a lien, to be collected the same as any other tax in favor of such city, and for compelling the proprietors or owners, agents or assignees, occupants or tenants of the lot or property, house or building upon or in which the same may be, to abate and remove the same; to regulate the construction and arrangement of water closets, privy vaults; also the emptying and cleaning of such vaults; to create and complete an accurate system of registration of marriages, births, deaths and interments occurring in or near such city, for purposes of legal and genealogical investigations and to furnish facts for statistical, scientific, and particularly for sanitary inquiries. When complaint is made, or a reasonable belief exists, that an infectious or contagious disease prevails in any locality or house, to visit such locality or house, make all

23 May, 1874.

Creation of.  
How constituted.

Compensation.

Quorum.

Appointment of  
health officers.Fees to be paid into  
the treasury.Cost of removal of  
nuisances a lien on  
the property.Registration of  
births, marriages  
and deaths.Powers in case of  
contagious dis-  
eases.

Under the act of 25 May, 1867, P. L., 204, they are now classed as follows:

1. Six hundred thousand or over.
2. Between one hundred and fifty and six hundred thousand.
3. Seventy-five to one hundred and fifty thousand.
4. Forty-five to seventy-five thousand.
5. Twenty to forty-five thousand.
6. Ten to twenty thousand.
7. Less than ten thousand.

By sec. 1, Art. XXIII, P. L., 260, of this act, "all laws or parts of laws heretofore passed, whether general or special, relating to the incorporation and government of any of the cities of this Commonwealth inconsistent herewith, or supplied by the provisions hereof, are hereby repealed; but no right or interest which has become vested thereunder shall be destroyed or impaired by the operation of this act or by the exercise of any power granted therein."

\*The action of a board of health fixing the compensation of a physician whom they were empowered to employ is conclusive.—*Wilkesport v. Richter*, 81 Penn. St., 508.

23 May. 1874.

necessary investigations by inspection, and on discovering that such infectious or contagious disease exists, to send the person or persons so diseased to the pest house or hospital. The council may grant power to make and pass all such orders and regulations as they shall from time to time deem necessary and proper for the public health and for the prevention of diseases; said orders and regulations when adopted shall have all the force and effect of ordinances of such city.

Nuisances,  
power to declare  
and abate.

51. Whenever any building, erection, excavation, premises, business, pursuit, matter or thing, or the sewerage, drainage or ventilation thereof, in the opinion of said board of health, whether in whole or in part, (shall) be in a condition or in effect dangerous to life or health, the said board may declare the same, to the extent it may specify, as a public nuisance or dangerous to life and health, and the said board may order the same to be removed, abated, suspended, altered or otherwise improved or purified, as said order shall specify, and shall cause said order, before its execution, to be served on the owner, agent, occupant or tenant thereof, or some of them: *Provided*, Said parties, or any of them, are in such city and can be found; and if the party so served shall, before its execution is commenced, apply to said board to have said order or its execution stayed or modified, it shall then be the duty of said board to temporarily suspend or modify said order and to give to such party or parties together, as the case, in the opinion of the board, may require, a reasonable and fair opportunity to be heard before said board and to present proofs and facts against said declaration and the execution of said order, or in favor of its modification; and the board shall enter upon its minutes such facts and proofs as it may receive and its proceedings on such hearing, and thereafter may rescind, modify or reaffirm its said declaration and order and require execution of said original or of a new or modified order to be made in such form and effect as it may finally determine.

Order for removal  
of nuisance may be  
stayed or modified.

Sanitary police.

52. The mayor shall have power, and it shall be his duty, to detail from the regular police force of such city, or to make new appointments for the purpose, whenever, in the opinion of the board of health, the public health and sanitary condition of such city may require; such policemen when so detailed, or when appointed, shall be known as the "sanitary police." The number comprising the sanitary police to be determined by the board of health, according to exigencies of the circumstances; and said sanitary police shall be subject to the exclusive direction and control of said board, for the enforcement of proper sanitary measures and for the promotion of the public health; whenever, in the opinion of the board of health, the services of the sanitary police are no longer required, the sanitary condition of the city being clearly such as to render their longer continuance on said duty entirely unnecessary;

Under exclusive  
control of board of  
health.

they shall, on recommendation of the board of health, be returned to duty as regular policemen or be dismissed as the mayor may direct; but no permanent increase of the police force shall be made, without the consent of councils, by ordinance, duly enacted.

23 May, 1874.

53. Said board may take measures and supply agents, and afford inducements and facilities for general and gratuitous vaccination and disinfection, and may afford medical relief to and among the poor of such city, as in its opinion the protection of the public health may require; and during the prevalence of any epidemic disease, may provide temporary hospitals for such purposes.

Gratuitous vaccination and disinfection.

Temporary hospitals.

54. It shall be the duty of said board, on or before the first day of March in each year, to make a report in writing, to the city council of such city, upon the sanitary condition and prospects of such city; and such report shall set forth, generally, the statistics of deaths, the action of said board and of its officers and agents, and the names thereof for the past year, and may contain other useful information, and shall suggest any further legislative action deemed proper for the better protection of life and health.

Annual report to city council.

55. Whoever shall violate any provision of this act, or any order of said board of health, made under the authority of the same, or of any law or ordinance therein referred to, or shall obstruct or interfere with any person in the execution of any order of said board, or wilfully and illegally omit to obey any such order, shall be guilty of a misdemeanor, and on conviction, shall be subject to fine and imprisonment, or both, at the discretion of the court; such fine shall not exceed one hundred dollars, and such imprisonment shall not exceed ninety days; and all prosecutions and proceedings against any person for a misdemeanor under this act may be had or tried before any judge or tribunal having jurisdiction of any misdemeanors within such city; and any person, corporation or body which may have done or omitted any act or thing which is in this act, or any law or ordinance therein referred to, declared to be or to subject the party guilty thereof to punishment for a misdemeanor, shall, in addition thereto, be subject to a pecuniary liability in the nature of a fine, in an amount not to exceed one hundred dollars, as any court of record or any justice of the peace may decide.

Penalty for violations of act, &c.

Fine not to exceed \$100; imprisonment not to exceed ninety days.

Fine not to exceed \$100.

56. Where expenses shall be incurred by the board of health, under the provisions of this act, it shall be the duty of the city council of any city, upon application and certificate from said board of health, to pass the necessary appropriating ordinances to pay the expenses so incurred and certified.

Appropriation for expenses.

57. The proceedings of the board shall be public, and its journal of proceedings open to the inspection of any tax-payer.

Proceedings to be public.

23 May, 1874.

Removal of nuisances.

Ibid., § 20. As amended 11 April, 1878, P. I., 21-2. P. D. 1218, § 30. 1219, § 36, 38.

Quarantine laws against contagious diseases.

58. The said cities of the third, fourth and fifth classes, coming under the provisions of this act in their corporate capacities, are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act:

59. To make regulations to prevent the introduction of contagious diseases into the city, to make quarantine laws for that purpose, and enforce the same within five miles of the city; and,

60. To make regulations to secure the general health of the city, and to remove and prevent nuisances.\*

## V. CITIES OF THE FOURTH, FIFTH, SIXTH AND SEVENTH CLASSES.

24 May, 1887, § 1. P. L., 204.

Art. XV.

To consist of five members.

Ibid, § 2.

Qualifications.

Districts to be formed.

Mayor to appoint with consent of council.

Removals.

Vacancies.

Term of appointees.

Regular term.

Ibid, § 3.

Members to be sworn.

Annual organization

Secretary and his duties.

61. The councils of any city of the fourth, fifth, sixth or seventh class shall have power by ordinance to create a board of health as herein provided, with the powers and duties herein enumerated.

62. The said board shall consist of five members, who shall serve without compensation and none of whom shall be members of councils. At least two of their number shall be reputable physicians of not less than five years' experience in the practice of their profession. The board shall be appointed by districts to be fixed by councils, representing as equally as may be all portions of the city, and shall serve for the term of five years from the first Monday of April succeeding their appointment. The mayor shall nominate, and by and with the consent of the select council, appoint the members of said board, and shall in like manner remove any or all of them for official misconduct or neglect of duty, and fill all vacancies for the unexpired term. At the first appointment the mayor shall designate one of the members to serve for one year, one to serve for two years, one to serve for three years, one to serve for four years, and one to serve for five years, and thereafter one member of said board shall be appointed annually for the term of five years.

63. The members of the board shall severally take and subscribe the oath herein prescribed for city officers, and shall annually organize by the choice of one of their number as president. They shall elect a secretary, not out of their body, who shall keep the minutes of their proceedings and perform such other duties as may be directed by the board, and a health officer,

\* By act 18 March, 1875, cities of the third class which had not accepted the act, were authorized, by a two-thirds vote of the city councils, after a publication in the city or county paper or papers for two weeks, to adopt the 2d to the 8th clauses of this section, to remain in force therein until they shall have accepted the act, and no longer. P. D., 1219, n.

who shall execute the orders of the board, and for that purpose the said health officer shall have and exercise the powers and authority of a policeman of the city. The secretary and health officer shall each receive such salary as may be fixed by the board, and shall hold their offices during the pleasure of the board, and shall severally give bond to the city, in such sum as may be fixed by ordinance, for the faithful discharge of their duties, and take and subscribe the oath required of the members of the board. All fees which shall be collected or received by the board, or any officer thereof in his official capacity, shall be paid into the city treasury monthly, together with all penalties which shall be recovered for the violation of any regulation of the board. The president and secretary shall have full power to administer oaths or affirmations in any proceeding or investigation touching the regulations of the board, but shall not be entitled to receive any fee therefor.

64. The said board of health shall have power, and it shall be their duty, to make and enforce all needful rules and regulations to prevent the introduction and spread of infectious or contagious diseases, by the regulation of intercourse with infected places, by the arrest, separation and treatment of infected persons and persons who shall have been exposed to any infectious or contagious disease, and, by abating and removing all nuisances which they shall deem prejudicial to the public health; to enforce vaccination, to mark infected houses or places, to prescribe rules for the construction and maintenance of house drains, waste and soil pipes, and cess pools, and to make all such other regulations as they shall deem necessary for the preservation of the public health. They shall also have power, with the consent of councils, in case of the prevalence or apprehended prevalence of any contagious or infectious disease within the city, to establish one or more hospitals, and to make provision and regulations for the management of the same. The board may, in such cases, appoint as many ward or district physicians and other sanitary agents as they may deem necessary, whose salaries shall be fixed by the board before their appointment. It shall be the duty of all physicians practicing within the city to report to the secretary of the said board of health the names and residences of all persons coming under their professional care afflicted with such contagious or infectious diseases, in the manner directed by the said board.

65. The said board of health shall have power, as a body or by committee, as well as the health officer, together with his subordinates, assistants and workmen, under and by order of the said board, to enter at any time upon any premises in the city, upon which there is suspected to be any infectious or contagious disease, or nuisance detrimental to the public health, for the

24 May, 1887.

Health officer and his duties.

Salaries.

Bonds.

Fees received to be paid into the city treasury.

President and secretary authorized to administer oaths.

Ibid, § 4.

Powers and duties in case of infectious or contagious diseases.

Hospitals may be established.

Physicians and sanitary agents may be appointed.

Duties of all practicing physicians.

Ibid, § 5.

Abatement of nuisances.

24 May, 1874.

Costs and expenses.

Ibid, § 6.

Registration of marriages, births and deaths.

Rules and regulations to be published.

Penalties and expenses to be paid into the city treasury.

Ibid, § 7.

Estimate of receipts and expenditures to be submitted to councils annually.

Annual report.

State Board of Health to receive copies of reports.

purpose of examining and abating the same; and all written orders for the removal of nuisances issued to the said health officer by order of said board, attested by the secretary, shall be executed by him and his subordinates and workmen, and the costs and expenses thereof shall be recoverable from the owner or owners of the premises from which the nuisance shall be removed, or from any person or persons causing or maintaining the same, in the manner herein provided.

66. The said board of health shall have power to create and maintain a complete and accurate system for the registration of all marriages, births and deaths, which may occur within the city, and to compel obedience to the same upon the part of all physicians and other medical practitioners, clergymen, magistrates, undertakers, sextons and all other persons from whom information for such purposes may properly be required. The board shall make, and cause to be published, all necessary rules and regulations for carrying into effect the powers and functions with which they are hereby invested, which rules and regulations shall have the force of ordinances of the city, and all penalties for the violation thereof, as well as expenses necessarily incurred in carrying the same into effect, shall be recoverable for the use of the city in the same manner as penalties for the violation of city ordinances, subject to the like limitation as to the amount thereof.

67. It shall be the duty of the board of health to submit, annually, to councils, before the commencement of the fiscal year, an estimate of the probable receipts and expenditures of the board during the ensuing year, and councils shall then proceed to make such appropriation therefor as they shall deem necessary; and the said board shall, in the month of January of each year, submit a report in writing to councils of its operations for the preceding year, with the necessary statistics thereof, together with such other information or suggestions relative to the sanitary condition and requirements of the city as it may deem proper, and councils shall publish the same in their official journal. It shall also be the duty of the board to communicate to the State Board of Health copies of all its reports and publications, together with such sanitary information as may, from time to time, be required by said State Board.

## VI. SANITARY REGULATIONS OF CERTAIN CITIES AND OF BOROUGHES.

68. [Most of the local health boards throughout the State have been organized pursuant to the powers granted by the acts of 23 May, 1874, P. L., 230 (as

amended 11 April, 1876, P. L., 20), for cities of the third, fourth and fifth classes, and 3 April, 1851, P. L., 320, for boroughs. (See IV. 47, VI. 70.) The following list of cities and boroughs possessing an organized sanitary department does not pretend to completeness, but those cited serve as examples. In many places reported as having no board of health, the more obvious functions of such a body are discharged more or less thoroughly by the mayor or burgess and councils, through the medium of a sanitary committee. It will be observed that there is an entire absence of that uniformity in municipal sanitary administration throughout the State, which is so desirable in order to enable the central board to maintain satisfactory relations with local boards.]

60. The board of health was erected by the following act (19 May, 1873, P. L., 365), which is given in full as a specimen of comprehensive sanitary legislation generally suitable for cities of the third, fourth and fifth classes:

Allegheny City.

SECTION 1. The presidents of the councils of the city of Allegheny shall annually, at the regular time at which the standing committees of councils are appointed, appoint one member of councils from each ward, who shall constitute a board of health for said city.

SECTION 2. Said councils shall annually, at meeting for election of city officers, elect one practicing physician as city physician and physician to the Tombs; the said board of health elect one person as health officer, and may, from time to time, appoint such other officers, agents and servants as may be authorized by councils for the purpose of carrying on the operations of the board; the salaries and wages of all which said officers, agents and servants, including said physician and health officer, shall first be fixed by councils.

SECTION 3. The present board of health of councils of said city shall continue until a new board shall be appointed under this act, and shall have all the powers and perform all the duties vested in or incumbent upon the board of health under this act.

SECTION 4. That the present health officer shall hold over until the election of his successors under this act. All the officers, agents or servants appointed by the present board shall exercise all the powers and perform all the duties of such officers, agents or servants under this act.

SECTION 5. That the board of health of said city shall have and is hereby invested with full power, when they shall deem it necessary for the protection of the city against any prevailing pestilential or contagious disease, to erect, purchase or lease such public hospitals as may be necessary; and said board, for this purpose, is hereby empowered by and with the consent of the councils of said city to take and appropriate such building or buildings and such ground in such place or places as they



may deem necessary: *Provided*, That in case of the owner or owners of such building or buildings or grounds not agreeing with the board as to the price or rent thereof, the same shall be estimated and assessed by a jury of three freeholders, to be appointed by the court of common pleas of Allegheny county; and said board may make such rules, orders and regulations as may be deemed proper for the government of said hospitals and to appoint such officers and servants as may be deemed necessary for such hospitals.

SECTION 6. Said board may take such measures as they may from time to time deem necessary to prevent the spread of small-pox by issuing an order requiring all parties in the city, or any part thereof, to be vaccinated within such time as they shall prescribe; and all persons refusing or neglecting to obey such order shall be liable to a fine of not less than five nor more than twenty-five dollars: *Provided*, It shall be the duty of the board to provide at the expense of the city for the vaccination of such persons as are unable to pay for the same.

SECTION 7. Whenever any nuisance shall be found on any premises within the city, contrary to any ordinance, the board are authorized, in their discretion, to cause the same to be summarily abated, in such manner as they may direct.

SECTION 8. In case of pestilence or epidemic disease, or of danger from anticipated or impending pestilence or epidemic disease, or in case the sanitary condition of the city should be of such a character as to warrant it, it shall be the duty of the board to take such measures, and to do and order, and cause to be done, such acts for the preservation of the public health, though not herein or elsewhere authorized, as they may in good faith declare the public safety and health to demand: *Provided, however*, That the expenditures incurred under this section shall not exceed the appropriations made by the councils of said city for sanitary purposes.

#### PROHIBITIONS.

SECTION 9. No person shall be put out, remove or allow to be put out or removed from the premises or place occupied or owned by him into any street or alley or other public place in said city any person having any infectious or contagious disease, but such owner or occupant shall immediately report such case to the health officer; and any person who shall violate any clause or neglect to perform any duty required in this section shall pay a penalty of not less than ten nor more than one hundred dollars, and may be confined in the county prison not exceeding sixty days.

SECTION 10. No person, master, captain or conductor in charge of any public or private conveyance, boat, vessel or railroad car shall knowingly bring into the city any person or persons diseased of cholera, small-pox, fever or any contagious disease whatsoever, under a pen-

alty of not less than ten nor more than one hundred dollars.

SECTION 11. No person shall erect or continue any privy within forty feet from any street or dwelling, shop or well of another, unless the same be furnished with a substantial vault six feet deep and made tight so that the contents thereof cannot escape therefrom, and be sufficiently secure and enclosed, under a penalty of ten dollars, and the like sum for every week of the continuance thereof after the first conviction.

SECTION 12. No person shall suffer or permit any cellar, vault, private drain, pool, privy, sewer or sink upon any premises belonging to or occupied by him to become nauseous, foul, offensive or injurious to the public health, under a penalty of not less than five nor more than fifty dollars, and a like penalty for every day the same shall continue after notice to remove and abate the same.

SECTION 13. No person shall be permitted to remove or cause to be removed any portion of the contents of a privy well, excepting in carts or vehicles so constructed as to be air tight and securely covered on the top; and if any person shall so do, or cause to be done, he shall forfeit and pay a fine of twenty dollars for each offense; and any constable or police officer is hereby authorized to seize and detain all carts, vehicles and horses actually taken with any person or persons detected in any violation of this section, and to deliver the same to the board for safe keeping, and as security for the payment of the penalty above prescribed.

SECTION 14. No person shall deposit the contents of any privy at any point within said city, other than such as may be designated by the board for such purpose, or without a permit from the health officer, under a penalty of not less than ten nor more than fifty dollars.

SECTION 15. Any owner or occupant of any oil refinery, tallow chandler's shop, soap factory, tannery, distillery, livery stable, cattle yard or pen, barn, packing house, slaughter house or rendering establishment who shall suffer the same to become nauseous, foul or offensive shall pay a fine of not less than twenty-five nor more than one hundred dollars.

SECTION 16. If any person, persons or corporation shall own, occupy or keep any grounds or other premises in such condition as to be offensive and a nuisance to the neighborhood, such person shall pay a fine of not less than ten nor more than fifty dollars, and a like fine for every day such nuisance shall continue after the first conviction.

SECTION 17. Every practicing physician who shall have a patient under any malignant, pestilential or infectious disease shall forthwith make report thereof to the board, describing the street, number and locality of the house or place where said patient may be; and for neglecting

so to do he shall be liable to a fine of fifty dollars for each and every offense.

SECTION 18. Every undertaker, before burying any person who may have died in said city, shall make report to the board, giving the name of such person, the locality, street and number where the body may be, and such other reasonable matters of information as the board may require; and for neglecting so to do he shall be liable to a fine of fifty dollars for each and every offense.

SECTION 19. That it shall be unlawful for any person or persons, or corporation, engaged in gathering, or hauling, or carrying bones, greases, dead animals, offal or garbage to do so without having the wagon, cart or vehicle in which the same is so carried or hauled tightly and securely covered to the satisfaction of the health officer; nor shall any wagon, cart or vehicle used for such purpose be suffered to stand in or upon any street, alley or public place of said city longer than shall be sufficient to transact such business, and in any case not more than fifteen minutes; and any person, persons or corporation violating any of the provisions of this section shall be subject to a fine of not less than five nor more than fifty dollars for each and every offense.

SECTION 20. That all actions for the recovery of any of the fines provided for in this act shall be by summary convictions before the mayor or any alderman of the city; and all fines shall be paid to the treasurer of said city.

#### HEALTH OFFICER.

SECTION 21. The health officer shall carry out all the orders of the board and the laws of the State in relation to the sanitary regulation of the city. He shall from time to time make thorough and systematic examinations of the city and cause all nuisances to be abated. He shall be permitted at all times, from the rising to the setting of the sun, to enter into any house, store, stable or other building and to cause the floor to be raised, if he may deem it necessary in order to a thorough examination of cellars, vaults, privies, sinks or drains, to enter upon all lots of ground, and to cause all stagnant waters to be drained off, all pools, sinks, vaults, drains or low grounds to be cleansed, filled up or otherwise improved or amended; to cause all privies to be cleansed, and to cause all dead animals or any nauseous or unwholesome thing or substance to be buried or removed beyond the city limits; and the cost and expense thereof shall be collected from the owners of the premises by penal action before the mayor or any alderman; in addition to which the owners or occupants of any such premises shall pay a fine of not less than ten nor more than one hundred dollars, and a like amount for every week in which the nuisance is continued after the first conviction.

tion: *Provided*, That notice to abate the said nuisance shall have been given a reasonable time previous by the health officer to the occupant of such premises, or the owner, if known to him.

SECTION 22. It shall be the duty of the health officer to visit and examine all sick persons who shall be reported to him as laboring under any infectious or pestilential disease, and under the advice of the physician to the board, and with the consent of the attending physician, cause all such persons to be removed to the hospital, or such other safe and proper place as he may deem fit, and cause them to be provided with nurses and medical attendance, at their own expense, if they are able to pay the same; but if not, then at the expense of the city.

SECTION 23. It shall be the duty of the health officer, when directed by the physician of the board, or by the board, to cause notice, printed or written in large letters, to be placed upon or near any house in which any person may be affected or sick with small-pox, upon which shall be printed or written "small-pox here." Any person defacing, altering, destroying or tearing down such notice, without the consent of the board or health officer, shall be subject to a fine of not less than twenty-five nor more than fifty dollars. The occupant of any house upon which such notice shall be placed shall be held responsible for the removal of the same; and if removed without consent as aforesaid, such occupant shall be subject to a fine of not less than twenty-five nor more than fifty dollars, unless he shall notify the board or health officer within twenty-four hours after the removal of said notice.

#### OF THE PHYSICIAN.

SECTION 24. It shall be the duty of the physician of the board to report to the board the prevalence of any epidemic, infectious or contagious disease, or other causes which, in his opinion, may be detrimental to the public health, and to see that the orders of the board in relation thereto are obeyed as far as practicable; to attend the meetings of the board, and give such information as he may deem important or the board require in relation to the sanitary condition and regulations of the city; to visit any person sick of any infectious, epidemic or contagious disease when required to do so by the health officer or board; to vaccinate all persons not able to pay for the same; to perform such other duties proper to his position which may be required by the board.

Board of health created by city ordinance of 1 July, 1885, under act 23 May, 1874, as amended 11 April, 1876, P. D., 1234.

Altoona.

Board organized under act 23 May, 1874, amended as above.

Bradford.

Carbondale.

No board. A committee of councils act in that capacity, organized under act 23 May, 1874. P. D., 1234.

Chester.

Board organized under act 23 May, 1874. P. D., 1234.

Corry.

Board organized under act 23 May, 1874. P. D., 1234.

Erio.

The board of health derives its powers partly from the special act of 25 March, 1862, §§ 2 and 4, P. L., 173, incorporating the city, which gives the mayor and councils power to enforce certain health regulations, and partly from the act of 23 May, 1874, §§ 20, 46. The right to make quarantine laws is found in § 20, cl. 6.

Harrisburg.

Under the act of 22 March, 1872, P. L., 500, a joint committee on sanitary affairs, of twelve members from select and common councils, acts as a board of health. There is now in preparation an ordinance, pursuant to act of 23 May, 1874, which will clothe this committee with the powers contemplated thereby for a board. The city now employs two sanitary policemen.

Lancaster.

Board established by special act of 5 April, 1867, § 39, providing that "the court of common pleas of said county are hereby authorized to appoint, yearly, a board of health, consisting of five resident real estate owners of said city, who shall serve without compensation."

Lock-Haven.

Board of health organized under act 23 May, 1874. P. D., 1234.

Meadville.

Board of health organized under act 23 May, 1874. P. D., 1234.

New Castle.

Board organized under act of 23 May, 1874. P. D., 1234.

Reading.

Board, consisting of seven members, created by special act 22 April, 1873, P. L., 831, which went into effect the following March.

Scranton.

Board organized August 30, 1878, under act of 23 May, 1874. P. D., 1234.

Titusville.

Board organized August 26, 1878, under act of 23 May, 1874. P. D., 1234.

Wilkes-Barre.

No board.

Williamsport.

Board created by act of 4 April, 1872, a supplement to the act incorporating the city. City councils appoint the board annually, which elects a health officer. It is composed of one member from each ward; at least two of them shall be practicing physicians.

### Boroughs.

3 April, 1861 § 1. P.  
L., 220, P. D.,  
202.

70. Every borough within this Commonwealth that hereafter may be incorporated by an act of the General Assembly, or by the court of quarter sessions of any county, shall have power—

Ibid, § 2.

Vaults, drains,  
&c.

Right to enter on  
lands.

71. To make all needful regulations respecting the foundations and party-walls of buildings, and respecting vaults, cess-pools, sinks, drains and partition fences.

72. To enter upon the lands and premises of any person or persons, for the purposes authorized by this act, by themselves and their duly appointed officers and agents.

Nuisances.

73. To prohibit and remove any obstructions in the

highways of the borough, and any nuisance or offensive matter, whether in the highways or in public or private ground, and to require the removal of the same by the owner or occupier of such grounds, in default of which, the corporation may cause the same to be done, and collect the cost thereof, with twenty per centum advance thereon, in the manner provided herein for the cost of pavements made by the corporation.

74. To prohibit, within the borough, the carrying on of any manufacture, art, trade or business, which may be noxious or offensive to the inhabitants; the manufacture, sale or exposure of fire works or other inflammable or dangerous articles, and to limit and prescribe the quantities that may be kept in one place, of gunpowder, fire-works, turpentine and other inflammable articles, and to prescribe such other safeguards as may be necessary.

75. To make such regulations relative to accumulations of manure, compost and the like in barns, stable-yards and other places, and to prohibit the keeping of hogs within the borough, or within such limits within the same as they may prescribe.

76. To prohibit within the borough the burial or interment of deceased persons, or within such partial limits within the same as they may from time to time prescribe, and to regulate the depth of graves.

77. To make such other regulations as may be necessary for the health and cleanliness of the borough.

78. It shall be the duty of the chief burgess or other principal corporate officer to preserve order and maintain the peace of the borough, to enforce the ordinances and regulations, to hear complaints, to remove nuisances, and exact a faithful performance of the duties of the officers appointed.

Though the mayor of a city is justified in abating a nuisance dangerous to life, health and property, he has no right to direct the summary removal of a building which is not a nuisance *per se*, though its erection is prohibited by law; for such act he is personally liable. *Field v. Stokley*, 11 W. N. C., 344.

79. No Board. Sanitary committee, under act of 3 April, 1851, P. L., 320, P. D., 202.

Health committee, under act of 3 April, 1851, consisting of two members of the common council and a health officer.

Board created by act of 28 January, 1873, P. L., 100.

Health regulations enforced by the corporate officers of the borough, under act of 3 April, 1851.

Board organized 1886, under act of 3 April, 1851.

No Board. The burgess and constables enforce sanitary ordinances.

Board organized under act 3 April, 1851.

Board organized under act of 20 February, 1873, P. L., 136, consisting of one member from each ward.

Board composed of three members, of whom one must be a physician, organized December 7, 1880, under act of 3 April, 1851.

3 April, 1851.

Offensive trades.

Fireworks, &c.

Accumulations of manure; keeping of hogs.

Interments.

Health and cleanliness.

*Ibid.*, § 6.

Duties of chief burgess.

Ashley, Luzerne county.

Athens, Bradford county.

Car'le, Cumberland county.

Carmichaels, Greene county.

Dunmore, Luzerne county.

Holidaysburg,

Blair county.

Jenkintown,

Montgomery county.

Lebanon, Lebanon county.

New Cumberland, Cumberland county.

3 April, 1851.

Shamokin, North-  
umberland county,  
York, York county.

Board consisting of five members, organized 12 April, 1886, under act of 3 April, 1851.

The act of 1 April, 1873, P. L., 471, authorized the chief burgess and town council of the borough to appoint a health officer, who must be an educated physician; sundry ordinances have been passed pursuant to this act.

## VII. QUARANTINE.

### Port of Philadelphia.

27 January, 1862, § 1.  
P. L., 28.

Bills of health  
granted at ports in  
State of Delaware,  
to be recognized at  
lazaretto.

Proper officers at  
lazaretto may direct  
further quarantine  
where any infectious  
or contagious disease  
exists.

29 January, 1818, § 1.  
P. L., 33.  
W. D., 17.

Powers of board of  
health as to quar-  
antine regulations.

May appoint neces-  
sary officers and  
servants.

80. In future, such vessels and crews, goods and passengers, beds, bedding and apparel, as shall appear by the certificate of the board of health, or health officer, or (where there is no board of health or health officer) by that of any regular physician and three justices of the peace, at any port or district in the State of Delaware (reciting the quantity and quality, and, if any, the marks and numbers of such goods, beds, bedding and apparel, and the names of the crew and passengers), to have been landed at least fifteen days within the said State or district, and the said crew and passengers to be in a healthy state, and the said goods, beds, bedding and apparel, to be well aired and purified, and to the best of their knowledge and belief, to be free from contagion and infection, shall, upon due examination of such certificate, by the resident physician or other proper officer at the lazaretto of the port of Philadelphia, be permitted to proceed to Philadelphia or the port or place of their destination, in the same manner as if the said landing, airing and purification had taken place at the said lazaretto: *Provided*, That nothing hereinbefore contained, shall prevent the proper officers at the lazaretto aforesaid, in cases where, after any bill of health as aforesaid has been granted at any port or place in the State of Delaware, any infectious or contagious disease shall exist, or be suspected to exist on board any such vessel, from directing such further quarantine or detention; cleansing, airing and purification, as in the judgment of the said officers and board of health shall be requisite and necessary for the preservation of the people of the city and port of Philadelphia from pestilential and contagious diseases.

81. The said board shall have and hereby is vested with full power and authority to make general rules, orders and regulations for the government and management of the lazaretto, and the vessels, cargoes and persons there detained, or under quarantine, and of the health office and public hospitals, and for the mode of visiting and examining vessels, persons, goods and houses. And shall also have power to appoint such officers and servants as may be necessary to attend the

health office, the lazaretto and the city hospital, and convey communications and supplies to the said lazaretto and hospital, and such other officers and servants as may be necessary for the preservation of the health of the district; together with all temporary officers and servants that may be rendered necessary by the existence of any dangerous contagious disease in the city of Philadelphia, or in any other place within the United States: *Provided*, That such officers and servants shall not hold any offices of profit or trust under the United States; and to remove any of the officers or servants by them appointed, and to appoint other in their places, and to allow and pay the said officers and servants, so appointed, such compensation for their respective services as the said board shall deem just and proper. And the Governor is hereby authorized and required to appoint one physician, who shall reside at the lazaretto, and be denominated the lazaretto physician,\* and one physician who shall reside in the city of Philadelphia, and shall be denominated the port physician, one health officer and one quarantine master, all of whom shall be under the direction and control of the board of health.

29 January, 1818.

Such officers not to hold office under the United States.

Governor to appoint the lazaretto physician, port physician, health officer and quarantine master.

\* \* \* \* \*

82. The health officer, on receiving from the captain or master of any ship or vessel, the certificate as directed by this act, or where no certificate is to be given, on the arrival of the vessel, shall be entitled to receive from the captain or master, the following sums and no more, and to pay the same over, from time to time, as the board may direct, to the treasurer of the board of health, to wit: All American vessels sailing under coasting documents, arriving at the port of Philadelphia, from any port or place in the United States, between the river St. Croix and the river St. Mary (except ports or places between Sandy Hook and Cape Charles), shall pay two dollars and fifty cents, for each arrival during quarantine months; and the said vessels, during that time, shall (if having goods capable of containing contagion, persons, baggage or clothing from any foreign port or place, or any diseased person) stop at the lazaretto, and there be examined by the lazaretto physician and quarantine-master, under the rules, regulations and penalties in this act contained. And all American vessels from any port in the United States where they may have touched or traded from a foreign port or place, shall pay the same sum as if they had arrived direct from such port or place.

Ibid, § 2.  
F. D., 1667,  
W. D., 17.

Fees for certificate of health.

American coasting vessels from domestic ports between rivers St. Croix and St. Mary.

American vessels from domestic ports, where they have traded from a foreign port.

And all American vessels with coasting documents, arriving from any port or place between Sandy Hook and Cape Charles, including the bay and river Dela-

American vessels from between Sandy Hook and Cape Charles.

\* This office is, in respect to the power of removal, completely subject to the Legislature. *Commonwealth v. Sutherland*, 3 S. & R., 145.



25 January, 1818.

ware, during quarantine months, having on board merchandise of foreign growth or manufacture, or persons, baggage or clothing, from any foreign port or place or from any place to the northward or eastward of Sandy Hook, or westward of Cape Charles, shall stop at the lazaretto for examination, under the rules, regulations and penalties in this act contained; and shall pay for each arrival during quarantine months two dollars and fifty cents.

American vessels  
from other American  
ports.

All American vessels arriving from any port or place in New Brunswick, Nova Scotia, Canada, or the islands or ports adjacent the river St. Mary's, the coast of Florida, bay of Mexico, including New Orleans and ports adjacent, and from thence along the bay of Honduras and coast of Terra Firma, as far as the river Amazon, including all the islands generally denominated West India, Bahamas or Bermudas, shall pay on arrival five dollars.

American vessels  
from Europe, &c.

All American vessels arriving from any place in Europe, in the Western, Madeira, Canary or Cape Verd islands, the west coast of Africa, as far as latitude thirty-four degrees south, and from any place in the Mediterranean or straits thereof, or from any place from the river Amazon inclusive, and round the coast of Brazil, as far as latitude thirty-four degrees south, shall pay ten dollars each.

American vessels  
from other foreign  
ports.

And all American vessels arriving from any place beyond latitude thirty-four degrees south, or round Cape Horn or the Cape of Good Hope, shall pay twenty dollars each.

Foreign vessels.

And all foreign vessels arriving as aforesaid (except prizes to American vessels) shall pay twenty-five per cent. each, additional, unless otherwise regulated by any treaty.

Prizes.

And prize vessels taken by foreign armed vessels, shall pay twenty-five per cent. each, more than is paid by American vessels. And prize vessels taken by American vessels shall pay on arrival ten dollars each.

Public armed vessels  
and privateers

And public armed vessels and privateers shall pay six dollars each.

Large vessels may  
come to in the  
outer channel.

And any vessel of the burthen of one hundred and fifty tons and upwards, arriving at the lazaretto from any foreign port or coastwise, may come to in the outer channel, as near to the west end of the island of Little Tinicum, opposite the lazaretto, as her draught of water, wind and weather will permit, for the purpose of receiving the visit from the lazaretto physician and quarantine-master.

Additional fees in  
such cases.

And if the said vessel does not receive her visit in the inner channel, she shall pay an additional sum of five dollars, of which two dollars shall be paid to the lazaretto physician, and one dollar to the quarantine-master, as a compensation for their extraordinary services, and two dollars shall be paid into the treasury of the board.

83. The building now called the lazaretto, and the ground therewith reserved and occupied, and all the property and estate of every kind whatsoever now vested in the present board of health, shall become and be fully vested in the [board of health constituted by this act, immediately, and as soon as the same shall be organized, for the uses and purposes for which the said board is instituted and established, and the same shall be fully and entirely under the direction and management of the said board; and the said board shall have power to erect such buildings, and to make such enclosures on the lot or tract adjoining the lazaretto, as to them may seem proper and necessary.]

84. Every ship or vessel coming from any foreign port or place, bound to the port of Philadelphia, between the 1st day of June and the 1st day October, in every year, shall come to anchor in the river Delaware, as near the lazaretto as the draught of water and the weather will allow, before any part of the cargo or baggage be landed, or any person who came in such ship or vessel shall leave her, or any person be permitted to go on board, and shall submit to the examination hereinafter directed.

And if any master, commander or pilot shall leave his station before the said lazaretto, or if any master or commander shall permit or suffer any part of the cargo or baggage, or any person or persons arriving in such ship or vessel, from any port beyond the limits of the United States, to be landed on either shore of the Delaware bay or river, or suffer any person, except the pilot, to come on board before such examination be duly had, and a certificate obtained as is hereinafter specified, the person or persons so permitting, and the person or persons so landed or going on board (unless imminent danger of the loss of the vessel or lives of the crew shall render assistance necessary), being thereof convicted, upon indictment or prosecution under this act, by verdict, confession or standing mute, in any court having jurisdiction of the offence, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is herein directed.

85. And it shall be the duty of the lazaretto physician and quarantine-master, so soon as any ship or vessel shall be anchored near the lazaretto, between sunrise and sunset, immediately, wind and weather permitting, to go on board the same, and there thoroughly examine, in such form and manner as shall be prescribed by the board of health, the said ship or vessel, the crew, passengers, cargo and baggage on board the same, and to demand answers, under oath or affirmation, to be administered by either the said physician or quarantine-master, who are hereby severally empowered to administer the same, to all such questions as shall be put to any person on board such ship or vessel, touching the health of the crew and passengers during the voyage,

29 January, 1818, § 8.  
W. D., 18.

All property vested in the old board to vest in that organized under this act.

Ibid, § 4.  
P. D., 1848.  
W. D., 19.

Vessels from foreign ports to be examined at the lazaretto.

Penalty for communicating with the shore, before obtaining health certificate.

Duties of lazaretto physician and quarantine-master.

Lazaretto physician and quarantine-master may administer oath.

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When health certificate to be given.

Such certificate to be promptly presented at health office.

When vessels to perform quarantine.

Letter-bag of quarantined vessel.

Cleansing of vessel, &c., at expense of master, owners or consignees.

Certain goods may be immediately landed.

At expiration of quarantine certificate to be given.

and the nature and state of the cargo, as the board of health, by their rules shall from time to time direct to be asked; but it shall be the duty of the person so examining on oath or affirmation, before he shall proceed therein, to make known to the person interrogated the penalty imposed by this act upon the person who shall give false answers, under oath or affirmation, to the questions proposed in such examination.

And if upon such examination, it shall appear to the said physician and quarantine-master that the said ship or vessel came from a port or place at which no malignant or contagious disease prevailed at the time of her departure, that the persons on board such ship or vessel are free from every pestilential or contagious disease (measles excepted) and that the said vessel has had no malignant disease on board, either during the homeward bound voyage or during her continuance in a foreign port, and they shall see no cause to suspect that the cargo or any part thereof is infected, they shall forthwith deliver to the master or captain of such ship or vessel a certificate of the facts, in such form as shall be directed by the board of health.

And the said captain or master may, thereupon, proceed according to his destination, and shall present such certificate at the health office in Philadelphia, within twenty-four hours after his arrival and safely mooring there.

86. But if it shall appear, upon such examination, that the ship or vessel came from a port or place at which a malignant or contagious disease prevailed, such vessel shall be detained at the lazaretto, for such time as the board of health shall deem necessary, not exceeding twenty days.

And the letter-bag of the vessel, when purified, and such letters as the master, commander or passengers shall think proper to write to their owners, consignees or friends, shall be transmitted to the health officer in Philadelphia, who shall safely deposit the same in the postoffice.

87. And thereupon the board of health shall determine and direct what measures shall be pursued to cleanse the vessel and cargo, purify the clothing and baggage, and restore the health of diseased persons on board, which direction shall be carried into execution under the inspection of the lazaretto physician and quarantine-master, at the expense of the master, owners or consignees of the vessel and goods, respectively, in such manner as by the said orders shall be directed:

*Provided always*, That wine, rum, salt, sugar, spirits, molasses, mahogany, manufactured tobacco, dye woods, preserved fruits and such other articles as the board of health shall, by their general regulations, specify and permit, may be conveyed immediately to the city in lighters. And at the expiration of the said time, if it shall appear to the said physician and quarantine-master

ter, that no person has been sick with a malignant or contagious disease (measles excepted) on board said ship or vessel, either during the voyage homeward or during her continuance in a foreign port, nor any of the crew or passengers, or other person from on board such vessel. during the performance of quarantine, and the said physician and quarantine-master shall certify the said facts to the board of health, and that, in their opinion, the vessel, crew, cargo and passengers may be safely suffered to proceed to the city, the said captain or master may proceed with the same according to his destination, unless the board of health shall deem it necessary to cause a further detention of the said vessel or cargo, or of the crew or passengers, or of any baggage on board said vessel, in which case the same shall be detained until the board of health shall authorize the same to proceed and enter the city.

88. And upon the arrival of the said captain or master at Philadelphia, he shall present the said certificate of the physician and quarantine-master at the health office, within twenty-four hours after his arrival.

89. But if upon examination of any vessel by the said physician and quarantine-master as aforesaid, or during the performance of quarantine by any vessel, it shall appear to the said physician or quarantine-master that there has been any person sick on board the said vessel with any malignant or contagious disease, either during the voyage homeward or during the continuance of the vessel in a foreign port, or during the performance of quarantine at the lazaretto (or that any person on board such vessel has been affected with such disease), then in such case the vessel shall be detained such further time as the board of health may deem necessary. And the cargo and baggage, except such part thereof as, in the opinion of the board of health, may be supposed incapable of retaining infection, which said part may be transported to the city in lighters, shall, unless otherwise ordered and directed by the board of health, be unladen and thoroughly cleansed and purified, and the crew and passengers which were on board the said vessel, and the cargo and baggage on board the same, or any part thereof, except as before excepted, shall not be suffered to enter the city before the first day of October then next ensuing without the license and permission of the board of health to that effect first had and obtained: *Provided, nevertheless,* That such ship or vessel, after she shall have been thoroughly cleansed and purified, if no malignant disease appear on board, may be allowed to take in freight at the lazaretto, by means of lighters, and proceed to sea.

90. And if any master or captain or other person on board any vessel which shall be examined, agreeably to this law, shall not true answers make to all such questions as the lazaretto physician and quarantine-master or the said health officer or port physician shall ask,

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Further quarantine at discretion of board in case of contagion.

Certificate to be promptly presented.

In case of contagious disease on board, vessel may be further quarantined.

Cargo and baggage to be unladen and purified.

Crew and passengers not to enter the city without license.

When vessels may take in freight at lazaretto.

Penalty for deceiving health officers.

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agreeably to this act, or the rules heretofore established, or which shall from time to time be established by the board of health in conformity with this act, or shall knowingly deceive, or attempt to deceive, the proper officers as aforesaid in his answers to their official inquiries, he having been duly informed and apprised of the penalties imposed by this act on the person so offending, previous to his said examination, by the person making such examination, such person, for each and every offense, being thereof legally convicted, shall forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appropriated as hereinafter provided and directed, and moreover shall be sentenced to imprisonment at hard labor for any term not less than one year and not exceeding five years.

Penalty for neglecting to present certificate.

91. And if any captain or master of any ship or vessel shall neglect to present his certificate at the health office in any case in which he is hereinbefore directed so to do, within the time directed by this act, he shall forfeit and pay the sum of three hundred dollars, to be recovered and appropriated as hereinafter directed.

Or for refusing to comply with quarantine regulations.

And if any captain or master of any ship or vessel, or any other person on board the same, shall refuse or neglect to comply with the directions of the lazaretto physician and quarantine-master, which shall be made agreeably to this act, or the regulations of the board of health, with respect to the detention of any ship or vessel, or the landing from on board the same, of any person or persons, or of any goods, merchandise, bedding, baggage or clothing, or shall refuse to carry the same into effect, such person, for each and every offense, shall forfeit and pay a sum not exceeding five hundred nor less than two hundred dollars, to be recovered and appropriated as is hereinafter provided and directed.

Ibid. § 5. P. D., 1850, W. D., 21.

When vessels from domestic ports to be subject to quarantine.

92. Any ship or vessel coming from any port or place within the United States, at which port or place the said ship or vessel had only called in or touched, upon her arrival from a foreign port or place, shall be liable and subject to all the rules, regulations and restrictions of the preceding sections of this act, and shall be examined and treated, as well the vessel itself as the cargo, crew, passengers and baggage on board, in the same manner as if such ship or vessel had directly arrived at the lazaretto from a foreign port or place, without having first touched at a port or place within the United States.

Such vessels having foreign goods on board.

93. And all ships or vessels, as well vessels of war as merchant vessels, coming from any port or place within the United States, and bound to the port of Philadelphia, between the first day of June and the first day of October in every year, and having on board any goods or merchandise the growth or produce of any foreign place or country, or any person or persons, bedding or clothing, from any foreign port or place, shall come to anchor opposite the said lazaretto, and shall be exam-

ined by the said lazaretto physician and quarantine-master. And if the captain or master of any such ship or vessel shall produce such satisfactory proof as the board of health shall in that case direct to be required that the said goods or merchandise shall have been landed in the United States more than twenty days, and are free from damage, and that the said vessel, bedding, clothing and persons are free from the infection of any dangerous contagious disease, the measles excepted, then and in that case the said physician and quarantine-master shall give to the captain or master of such ship or vessel a certificate of the facts, permitting such ship or vessel to proceed to the city, which certificate the said captain or master shall present at the health office in Philadelphia within twenty-four hours after his arrival and safely mooring there. And if he should neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of two hundred dollars, to be recovered and appropriated as is hereinafter directed and provided.

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When certificate  
may be given in  
such cases.

Penalty for ne-  
glect to deliver  
certificate  
promptly.

94. And if the said captain or master shall fail to produce such satisfactory proof as aforesaid of the wholesome state of the said vessel, goods, merchandise, bedding, clothing and persons, the said vessel, goods, merchandise, bedding, clothing and persons shall be detained at the lazaretto, and shall be proceeded with in the same manner and subject to the same orders and regulations as are hereinbefore provided and directed in the case of vessels coming directly from a foreign port or place.

When such vessels  
to perform quaran-  
tine.

95. And if the captain or master of any such ship or vessel coming from any port or place within the United States, and bound to the port of Philadelphia, having on board any goods or merchandise, bedding, clothing or persons, as aforesaid, shall refuse or neglect to come to anchor opposite the lazaretto, and shall pass the same, with intent to proceed to the city without examination by, and certificate obtained from the said physician and quarantine-master as aforesaid, he shall, on conviction, forfeit and pay the sum of five hundred dollars, to be recovered and appropriated as is hereinafter provided and directed, and the said vessels, goods, merchandise, bedding, clothing and persons shall be sent back to the lazaretto, there to be proceeded with in such manner as the board of health, agreeably to this act, shall in that case devise and direct.

Penalty for passing  
lazaretto without  
anchoring.

96. When, in the opinion of the board of health, the interests of the port of Philadelphia may require it, and it can be done without prejudice to the health of the citizens, they may suspend the operation of section fifth of the act of 1818 under such rules and regulations as the board of health may make on the subject.

25 March, 1852, § 14.  
P. L., 181.  
P. D., 1551.  
W. D., 32.

Board of health  
may suspend fore-  
going section.

29 January, 1813, § 6  
P. L., 33.  
P. D., 1851.  
W. D., 22.

Vessels from the  
Mediterranean.  
When from port  
infected with the  
plague.

97. Every ship or vessel coming from the Mediterranean shall be subject to a strict examination under similar regulations and penalties as are provided in the fourth section of this act.

And if it appears that the said ship or vessel came from any place where the plague existed at the time of her departure, or has spoken with any vessel on board of which any person was afflicted with the plague, or if any person is affected with the said disease on his arrival at the lazaretto, or has been affected during the voyage, the said vessel shall not be suffered to proceed to the city, the cargo and baggage shall be unloaded and thoroughly cleansed and purified, and no part shall be suffered to enter the city without the permission of the board of health first obtained; and the crew and passengers shall perform a quarantine of not less than twenty days nor more than forty, at the discretion of the board of health: *Provided, nevertheless*; That such ship or vessel, after she shall have been thoroughly cleansed and purified, may be allowed to take in freight at the lazaretto by means of lighters and proceed to sea.

Ibid, § 7.  
P. D., 1851.  
W. D., 22.

Penalty for persons, &c., from foreign ports where there is a malignant disease, entering the city without permission.

98. Any person or persons, and all goods, merchandise, bedding and clothing, arriving at any port or place within the United States from any foreign port or place at which any malignant or contagious disease (measles excepted) prevailed at the time of their departure, or in any vessel in which any such disease existed while they were on board, the same are hereby prohibited from entering the city or county of Philadelphia or the county of Delaware (except the township of Tinicum) at any time between the first day of June and the first day of October in any year, either by land or water, without permission of the board of health first had and obtained, under the penalty of five hundred dollars for each and every offense, and the forfeiture of all such goods, merchandise, bedding or clothing, to be recovered and appropriated as is hereinafter directed.

Persons and goods first landed at any other port, to perform quarantine.

99. All goods, wares, bedding, clothing and merchandise, seamen or passengers, landed from on board any ship or vessel belonging to the port of Philadelphia at any other port of the United States shall be subject to perform twenty days' quarantine previously to entering the city or county of Philadelphia, under the same penalty as in the fifth section, without permission first obtained from the board of health.

Ibid, § 8.  
P. D., 1852.  
W. D., 22.

No persons or goods from any infected place to enter city, without permission.

100. No person or persons, goods, wares, merchandise from any port or place at which any malignant or contagious disease (measles excepted) prevailed at the time of their departure, or from on board any vessel in which any such disease existed while they were on board, shall enter or be brought into the city or county of Philadelphia at any time between the first day of June and the first day of October in any year, by land or water, without the permission of the board of health first obtained, under the penalty of any sum not exceed-

ing five hundred dollars for each and every such offense, and the forfeiture of all such goods, wares, merchandise, bedding and clothing, to be recovered and appropriated as directed by the twenty-ninth section of this act.

101. Whenever the board of health shall receive information that any malignant or contagious disease (measles excepted) prevails at any port or place within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and if it shall appear that the disease prevails as aforesaid, all communication with such infected port or place shall be subject to such control and regulations as the board of health may from time to time think proper to direct, and publish in one or more newspapers published in the city of Philadelphia.

And thereupon every person or persons, and all goods, wares, merchandises, bedding and clothing, from such infected port or place, and having entered and brought into the city and county of Philadelphia, contrary to such regulations, shall be subject to the penalties and forfeitures provided by the next preceding section of this act.

And all vessels from such port or place, and bound to the port of Philadelphia shall stop at the lazaretto, and be proceeded with in the same manner, and under the same penalties and forfeitures, as are provided in cases of vessels coming from foreign ports. And every person or persons having entered or been brought into the city or county of Philadelphia, from such infected port or place aforesaid, shall also be conveyed by any person authorized by the board to such place for purification, as the said board may appoint or direct for that purpose, and be there detained at the pleasure of the board, any time not exceeding twenty days, and at the expense of such person or persons.

102. And if the said board shall have cause to suspect that any person or persons, at the time within the city and county of Philadelphia, have been at such infected port or place, within fifteen days since such disease prevailed at such port or place next preceding, the said board may lawfully require such person or persons to render satisfactory proof of their place or places of abode during the same period.

And if such person or persons neglect or refuse to render such proof, or fail in proving their residence, other than at such infected port or place, every such person shall be dealt with, by purification and detention, as persons coming from such infected port or place.

103. No lazaretto physician, quarantine-master, or other officer, or servant of the said lazaretto, shall absent himself from the place of his duty between the first day of June, and the first day of October, on any pretense whatsoever, for any time, without leave first

29 January, 1818.

Ibid, § 9.  
P. D., 1852.  
W. D., 23.

Board to regulate communication with infected places and publish such regulations.

All persons and goods therefrom subject to such regulations.

All vessels therefrom to stop at lazaretto.

Persons improperly entering city to be detained for purification.

Persons may be required to prove absence from infected ports.

Where proof not furnished.

Ibid, § 10.  
W. D., 24.

Officers, &c., of lazaretto not to absent themselves at certain times under penalty.



29 January, 1818.

Ibid, § 11.  
F. D., 1552.  
W. D., 24.

Physicians to have  
sick removed to  
proper building,  
and to attend them.

obtained in writing from the board of health, under the hand of the president or chairman for the time, attested by the secretary, and entered on the minutes, under the penalty of forfeiting his office, and a fine of any sum not exceeding five hundred dollars.

104. It shall be the duty of the lazaretto physician immediately on the arrival of any ship or vessel liable to be detained at the lazaretto in order to be cleansed and purified as aforesaid, to cause the sick, if any on board, to be removed to the building which shall be appointed by the board of health for their reception, and diligently and impartially, with his best skill, to attend upon and administer medical assistance to each and every sick person that shall be therein lodged, and generally to superintend and cause to be executed such orders and regulations as the said board shall, from time to time, ordain for the government and management of the lazaretto, and of the vessels, cargoes and persons under quarantine.

Ibid, § 12.  
P. D., 1553  
W. D., 24.

How vessels to be  
moored at laza-  
retto.

105. It shall be the duty of the quarantine-master, immediately after the arrival and examination as aforesaid, of any ship or vessel liable to be detained at the lazaretto for purification as aforesaid, to direct and cause such ship or vessel to be properly moored near the lazaretto, at such distance from any vessel or vessels under quarantine, as may prevent the communication of any infectious disease to or from the same. And the cargo, bedding and clothing, or any part thereof, contained in such ship or vessel, to be landed, cleansed and purified, under the direction of the lazaretto physician.

Cleansing of cargo,  
&c.

Intercourse be-  
tween quarantined  
vessels prohibited.

And it shall be the particular duty of the said quarantine-master to prevent any personal intercourse between the persons on board different vessels under quarantine; and for that purpose to take possession of and secure the boats of such vessels, from sunset to sunrise of the succeeding day, until their respective terms of quarantine shall be completed, to preserve and enforce order and obedience to this act, and all such orders and regulations as the board of health shall, from time to time, ordain for the government and management of the lazaretto, and the persons, vessels and cargoes under quarantine.

Boats to be secured  
at night.

Ibid, § 13.  
P. D., 1553.  
W. D., 25.

Duties of port phy-  
sician, when in-  
formed of existence  
of contagion.

108. It shall be the duty of the port physician, upon receiving information from the health officer, or other person whomsoever, that any person or persons on board of any ship or vessel, in the port of Philadelphia, is or are afflicted, or suspected to be afflicted, with any pestilential or contagious disease, or that there is just cause to suspect that the cargo, or any part thereof, contained in any such ship or vessel, is infected with any such disease, the said physician, in either of the foregoing cases, shall visit and carefully examine such ship or vessel, and if he shall discover any sick person or persons on board any such ship or vessel, he shall thereupon have and exercise the authority to direct

such sick person or persons to be removed to the said lazaretto, or to some other safe place which may be specified by the board of health.

29 January, 1818.

And the said physician shall, without delay, report the state of said vessel, cargo and crew, to the board of health, who shall direct and determine how the crew, passengers, vessel and cargo, shall be disposed of and managed for the restoration of their health and purification. And on the arrival of any ship or vessel in the port of Philadelphia, from any foreign port or place, from the first day of October in any year, to the first day of June in the next succeeding year, it shall be the duty of the said physician, provided such ship or vessel shall not have been previously visited and examined by the physician resident at the lazaretto, and quarantine-master, and before any of the passengers, crew, cargo or baggage are landed, to visit and carefully examine such ship or vessel, in manner and form as the said lazaretto physician and quarantine master are bound to do, and to demand answers under oath or affirmation, to be administered by the said port physician, who is hereby empowered to administer the same in conformity with this act.

To report at once to board of health.

To examine vessels not previously examined at lazaretto.

Port physician may administer oath.

107. And if the crew, passengers, vessel and cargo be in a healthy state, and if there shall be no ground to suspect that any of the crew or passengers have died on the voyage of any dangerous contagious disease (measles excepted), or that the cargo, bedding or clothing is infected, then and in such case, the said physician shall give to the master or commander a certificate of the facts, which the said master or commander shall present at the health office, within twenty-four hours after such examination, under penalty of a fine of two hundred dollars; and if he shall neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of two hundred dollars, to be recovered and appropriated as is herein provided and directed.

When to give certificate of health.

108. And if on examination any suspicion shall arise in the mind of the said physician, touching the health of the crew or passengers, or the infectious state of the vessel, cargo, bedding or clothing on board, no part thereof shall be landed, but the said physician shall immediately report the same to the board of health, who shall direct and determine what measures shall be pursued relative thereto. And every ship or vessel, so as aforesaid arriving at the port of Philadelphia, shall be visited by the port physician previously to her being hauled to any wharf within the city or district aforesaid, or Windmill Island.

To report in case of suspicion to board of health.

Every vessel to be visited by port physician.

And every captain or any other person so hauling such vessel to any wharf as aforesaid, shall, for each and every offense, forfeit and pay the sum of two hundred dollars, to be sued for and recovered as herein provided, unless it shall be made appear that there was at the

Penalty for hauling to wharf before such visit.

29 January, 1818.

Ibid, § 14.  
P. D., 1854.  
W. D., 26.

Health office to be kept open daily.

Health officer to preserve all bills of health.

Shall keep register of vessels and masters, owners, &c.

Shall attend meetings of board of health.

And collect all penalties.

And give an official bond.

Ibid, § 15.  
P. D., 1854.  
W. D., 26.

Letter-mail from lazaretto.

time imminent danger of the loss of such ship or vessel or of the passengers or crew thereof.\*

109. It shall be the duty of the health officer, at reasonable hours, on each day (Sundays excepted), to open and keep a public office, at such convenient place in the city of Philadelphia as shall be directed by the board of health, whereat all masters or captains of vessels shall deliver the certificates or bills of health to them granted by the lazaretto physician and quarantine master, or port physician as aforesaid. And the board of health shall there assemble and meet as often as they shall deem needful. \* \* \* \* And the said health officer shall file and preserve in good order, all the certificates or bills of health so delivered, and shall keep a register of the vessels, and the names of the captains or masters, owners or consignees, for which the same were respectively granted, the port or ports from which the ship or vessel respectively sailed, or at which they touched during their respective voyages, and the number of persons on board thereof respectively at the time of their leaving their respective ports of departure, and also at the time of their arrival respectively at the port of Philadelphia. And the said health officer shall attend the health office at the meetings of the board of health, and at such other times as shall be required in discharging the duties of his appointment, and generally enforce and execute the regulations and instructions of the board of health. And it shall be the duty of the said health officer to collect, recover and receive all forfeitures and penalties imposed, and sums of money directed to be paid by this act.

110. And the said health officer shall, before he enters on the duties of his office, give bond with securities to the satisfaction of the board of health, conditioned for the faithful execution of the duties of his office, and to account for all moneys which may come into his hands in performance thereof. And the said bond shall be a lien on the estate of the said health officer and his sureties respectively.

111. The letter-mail shall, during the quarantine season, leave the lazaretto for the health office in the city of Philadelphia, and return twice in each juridical day, at such hours as the board of health shall determine, and shall be free for the transmission of letters to and from persons who may be within the bounds of the lazaretto, or on board of vessels which may be detained there.

And it shall be the duty of the health officer, immediately after the arrival of the lazaretto mail, to deposit in the post-office the letters received thereby, excepting those which shall be addressed to the board of health and the officers connected therewith.

\*The danger must be imminent, that is, impending, threatening, momentary, and the vessel must be in extreme peril to justify being hauled to the wharf. Board of Health v. Miercken, District Court. Phila., June 16, 1848. MSS.

112. Under the provisions of the fifteenth section of the act, entitled 'an act to establish a health office and to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other purposes,' passed the 29th day of January, 1818, the board of health of Philadelphia are hereby authorized to send letters and other packages to the lazaretto and to Fort Mifflin, and to receive letters and packages sent from either of said places, to the health office of the said city, once or twice a day, as they may deem expedient.

113. Every diseased person duly landed or sent to the lazaretto, by either of the aforesaid physicians, quarantine-master or health officer, shall be there kept and maintained until the lazaretto physician shall grant him or her a discharge in writing.

And if, before obtaining a discharge as aforesaid, any such person shall elope or otherwise absent himself or herself from the lazaretto, it shall be lawful for the health officer, or any constable or other person whom he shall call to his assistance, and they are hereby enjoined and required to lend such assistance, to pursue and apprehend the person so escaping or absentsing himself or herself from the lazaretto, and there again deliver him or her, to be detained until he or she be duly discharged as aforesaid.

114. And moreover, the person so eloping and absentsing himself or herself shall, for each and every offense, suffer such temporary confinement in the lazaretto, not exceeding three months, as the board of health shall ordain and award.

And if any master or captain shall knowingly receive or employ on board of his ship or vessel, or if any housekeeper or other inhabitant of this Commonwealth shall knowingly receive, harbor or in any way entertain any person so eloping or absentsing from the lazaretto, each and every master and captain, and each and every housekeeper or inhabitant so respectively offending, shall, on being thereof legally convicted, forfeit and pay a sum of two hundred dollars.

And if any person arriving in and belonging to any vessel detained at the lazaretto \* \* \* shall elope or absent himself or herself without having first obtained a discharge signed by the lazaretto physician and the quarantine-master, or if any person other than those detained at the lazaretto as aforesaid shall go on board or alongside of any ship or vessel whilst under quarantine as aforesaid, or if any person not authorized by the board of health shall go within the limits of the lazaretto, such person or persons shall perform such quarantine as the board of health may direct; the person so offending, upon legal conviction of such offense, shall forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed.

11 June, 1832, § 1.  
P. L., 620.  
P. D., 1554.

Further regulations of lazaretto mail.

29 January, 1818, §16.  
P. L., 38.  
P. D., 1554.  
W. D., 27.

Sick persons to be maintained at lazaretto until discharged.

Persons escaping to be apprehended.

Penalty for escaping.

Penalty for harboring escaped persons.

Penalty for escaping from vessel at lazaretto, &c.

29 January, 1818.

Penalty for disobeying directions of physician, &c.

115. And if any diseased or other person landed and sent to the lazaretto by any officer having authority to do the same, or any person arriving in or belonging to any ship or vessel detained at the lazaretto as aforesaid, shall refuse or neglect to obey the directions of the lazaretto physician or quarantine-master respectively, agreeably to this act, and the order and regulations by the board of health which shall from time to time be ordained and established for the government and management of the lazaretto and the persons, vessels and cargoes under quarantine, the person so refusing or neglecting shall for each and every offense, on being thereof legally convicted, forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed.

Expenses of sick at lazaretto to be paid by the importer, master, owner or consignee, and repaid by such sick persons.

116. And the expense and charge of boarding, lodging, nursing, medicine, maintenance and other necessities which shall have been provided for the diseased persons landed and sent to the lazaretto as aforesaid, and also of burying them in case of their death, shall be paid and discharged by the importer, master or captain, owner or consignee of the ship or vessels, respectively, in which such diseased persons were respectively imported, agreeably to the rates in that behalf by the board of health to be ordained and established: *Provided always, nevertheless*, That when the diseased persons are passengers and not servants, the said charges shall be repaid by them, their executors or administrators to the captain or master, owner or consignee, who shall pay and satisfy or be bound to pay and satisfy the same as aforesaid.

The master is liable for expenses of curing seamen sent ashore to hospital whilst sick with an infectious fever.—*Johnson v. Doubty*, 1 Ashmead, 165. The owners of a coasting vessel are liable for attendance to sick seamen.—*Holt v. Cummings*, 102 Penn. St., 212. The provision in the act that there shall be an examination by the lazaretto physician under oath is merely directory and will not affect the right to recover the expenses of healing the sick, though they had been ordered to the hospital before the oath was made.—*Board of Health v. Cope*, Dist. Court., Phila., 22 Dec., 1849, MSS. P. D., 1555, n.

Ibid, § 17.  
P. D., 1555,  
W. D., 23.

Board may order vessel back to lazaretto notwithstanding health certificate.

Or remove them from place infected.

117. When any vessel shall come up to the city of Philadelphia, or the shores of Southwark or the Northern Liberties, although the said vessel may have obtained a certificate of health from the lazaretto physician and quarantine-master, or the port physician, if the said vessel shall appear to the board of health to be infected with any contagious disorder, dangerous to the community, the said board are hereby authorized to order the said vessel to the lazaretto, there to undergo the necessary purification, before she will be permitted to return to the said city or the shores thereof aforesaid. And the said board are hereby authorized and empowered to remove any vessel or vessels from any part of the city or shore aforesaid, as shall be infected with such disorders as aforesaid, to such convenient distance

as they may deem proper, although such vessel may not be infected.

118. Whenever, by means aforesaid, or by the report of the port physician or any other physician appointed by the board of health, whom the said board are hereby authorized to send to places or houses suspected to be infected, it shall come to the knowledge of the said board that any person within the city of Philadelphia, the district of Southwark, the townships of the Northern Liberties, Moyamensing or Penn, is afflicted with any contagious disease, dangerous to the community, it shall and may be lawful for the said board to take orders for preventing the spreading of the contagion, by forbidding and preventing all communication with the infected house or family, except by means of physicians, nurses or messengers to convey the necessary advice, medicines and provisions to the afflicted, and shall exercise all such other powers as the circumstances of the case shall require, and as shall, in their judgment, be most conducive to the public good with the least private injury.

The passage of health and quarantine laws is within the reserved powers of the States.—Board v. Lloyd, 1 Phila., 20. The power of the board of health does not extend to the removal of tenants, and the closing up of their houses, unless justified by the existence of a pestilential disease.—Eddy v. Board of Health, 10 Phila., 94.

119. No pilot, bringing a ship or vessel to the lazaretto, in an apparent state of good health, shall be obliged to perform quarantine, but the lazaretto physician shall grant such pilot a certificate permitting him to proceed to the capes of Delaware, in order that he may prosecute his profession; but such pilot shall not, on any pretense, come into the city of Philadelphia, the Northern Liberties, the district of Southwark, or the townships of Moyamensing or Penn, for twenty days from the date of such certificate, under the penalty of one hundred dollars, or one year's imprisonment, which penalty shall be recovered and applied in the manner hereinafter directed.

120. And any pilot bringing to the lazaretto a ship or vessel infected or supposed to be infected with any pestilential or contagious disease, may be permitted to go and remain on shore, within the bounds of the lazaretto, during the time the ship or vessel brought thither shall be detained under quarantine: *Provided always*, That if the said pilot shall be infected with any disease as aforesaid, he shall be detained and treated in the like manner as seamen or passengers so infected are herein directed to be detained and treated: *And provided further*, That if he shall go without the bounds of the lazaretto, he shall be liable to the same penalties as are by this act imposed on seamen or passengers escaping therefrom.

121. The buildings and lot of ground situate to the north-west of Bush Hill, in the county of Philadelphia,

29 January, 1818.

Ibid, § 18.  
W. D., 11.

Quarantine of an infected house.

Ibid, § 19.  
P. D., 1555.  
W. D., 23.

Pilots not to perform quarantine.

But not to enter the city.

Pilot bringing up infected ship to remain at lazaretto.

29 January, 1818, §22.  
W. D., 12.

Hospital near Bush  
Hill for contagious  
diseases.

All persons who  
cannot be properly  
cared for at home  
to be sent to hospi-  
tal.

Patients must bear  
their own expenses  
when able.

Ibid, § 23.  
P. D., 1555.  
W. D., 28.

Board to regulate  
communication  
with infected  
places in America.

Quarantine regu-  
lations between in-  
fected parts of the  
city.

Citizens as well as  
civil officers to aid  
in enforcing the  
same.

shall be and continue a public hospital for the city of Philadelphia, the township of the Northern Liberties, and the districts of Southwark, Moyamensing and Penn; and all persons other than persons on board of any ship or vessel, and liable to be sent as aforesaid to the lazaretto, residing within the city of Philadelphia, the district of Southwark, the townships of the Northern Liberties, Moyamensing and Penn, who shall be afflicted with any pestilential or contagious disease (the measles excepted), may, upon the advice and order of the port physician, or any other physician or person authorized by the board of health to grant such order, be removed by the health officer, and such assistance as he shall for that purpose employ, to the said hospital, or to such other place as the physician or board of health shall approve, if the person afflicted with any contagious or pestilential disease cannot be properly and sufficiently attended at home, there to be lodged, nursed and maintained, and kept until duly discharged by a permit in writing, signed by a physician of the said public hospital: *Provided always, nevertheless*, That each and every patient, and his or her estate, shall be liable to pay, and reimburse, all the expenses on his or her account incurred in the said hospital, unless the board of health award that he or she shall be exonerated therefrom.

122. Whenever the said board of health shall receive information that any contagious disease rages in any port or place within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and it shall and may be lawful for the said board to prohibit and prevent all communication, by land and water, with such infected ports or places, by stopping all vessels coming into the port of Philadelphia, and at and before the lazaretto, in the same manner and under the same penalties and forfeitures as are hereby provided in cases of vessels coming from foreign ports, and by stopping all persons coming from said infected places, in such manner as the circumstances and exigencies of the case shall require.

And the said board of health are hereby authorized and required, whenever a fever of a contagious nature shall appear in any part of the city of Philadelphia, the district of Southwark, or the townships of the Northern Liberties, Moyamensing or Penn, to adopt, without delay, such prompt measures as will effectually prevent all communication between the part or parts so infected, and any other part of the city, district, or townships. And all judges, justices, sheriffs, constables and other civil officers and citizens of this State, are hereby authorized and empowered, enjoined and required, to aid and assist the said Board and their officers to the utmost of their power, in carrying into effect such rules, orders and regulations touching the stoppage of such intercourse, or the removal of the infected when they

cannot properly be attended to at home, as the board shall order and publish.

123. Every person keeping a boarding or lodging house in the city of Philadelphia, the district of Southwark, or the townships of the Northern Liberties, Moyamensing or Penn, between the first day of June and the fifteenth day of October in any year, shall, within twelve hours after any seafaring man or sojourner shall become sick in such boarding or lodging house, report in writing the name of such diseased person to the health officer. And no master of a vessel or other person whatsoever shall remove any sick person from any vessel lying in the river Delaware, before the city of Philadelphia, the district of Southwark, or the township of the Northern Liberties, before such sick person has been visited by the port physician, and a written permit granted by him for the purpose of such removal. And any person neglecting or refusing to comply with the provisions of this section shall, on legal conviction thereof, be subject to a fine not exceeding fifty dollars, or to imprisonment for any term not exceeding three months; and no person shall hereafter be subject to be punished by imprisonment by virtue of this act without a previous conviction in due course of law: *Provided*, That nothing herein contained shall be construed to prevent the board of health from temporarily confining any person within the lazaretto bounds for such time as the said board may deem necessary for the safety of the public.

124. And the quarantine-master shall accompany the lazaretto physician, on the arrival of vessels at the lazaretto, and shall have them moored, and, when necessary, well cleansed and whitewashed, for which he shall be paid in addition to his salary, by the master, owner, or consignee and shall be allowed to charge for lime and brushes the usual prices at which such articles are retailed in the city of Philadelphia. He shall also be authorized to receive all letters and papers to be forwarded to Philadelphia by the lazaretto mail, and by any other conveyance he may think proper. And no person shall be permitted to go on board any vessel under quarantine, except the lazaretto physician and quarantine-master, unless at the request of either of them to perform some necessary service.

And the quarantine-master shall be furnished with such boats and crews as the board of health may judge necessary for having the duties of the lazaretto physician and quarantine-master carried into complete effect, and shall also be furnished with a good spy-glass.

125. [The salary of the health officer is \$2,100.00, payable by councils: acts 8 February, 1853, P. L., 45, P. D. 1554, n., and 23 April, 1864, P. L. 549, W. D. 32. That of the port physician was fixed at \$1,200.00 by act 5 May, 1864, P. L. 820, P. D. 1553. n., and increased to \$1,800.00, by act 6 April, 1870, set forth below.]

38 BOARD OF HEALTH.

20 January, 1818.

Ibid, § 24.  
W. D., 29.

Boarding-house keepers to report cases of sickness to health officer.

No sick person to be removed from any vessel until port physician has visited him and granted permit.

Penalty.

Ibid, § 30.  
W. D., 29.

Duties and privileges of quarantine-master.

Persons not permitted to go on board vessels under quarantine.

Salaries and fees of the various health officers.



6 April, 1870, P. L.,  
979, W. D., 32.

Health officer au-  
thorized to em-  
ploy a clerk.

14 March, 1871, § 1.  
P. L., 332.  
P. D., 1549 n.  
W. D., 32.

2 April, 1871, § 1.  
P. L., 210.  
P. D., 1556.  
Supplement to act  
29 January, 1818.  
P. L., 88.

Ships from south-  
ward of Cape Fear  
subject to examina-  
tion.

Masters and pilots  
liable to same re-  
strictions.

Duties of physician  
and quarantine-  
master.

Powers of board of  
health.

**126.** The health officer in and for the port of Philadelphia, for services rendered in issuing permits or certificates of health to vessels, to the collector of the port and for other purposes, shall receive the sum of two dollars for each every permit or certificate issued by him, and he is hereby authorized to employ a clerk, at a salary not exceeding twelve hundred dollars per annum; and the port physician of the city of Philadelphia shall receive the sum of six hundred dollars per annum, and one dollar for every vessel examined and health certificate furnished by him; the above payment to be made by the health officer out of the fees received by him, and which payments shall be in addition to those now received by said officers.

**127.** Hereafter the annual salary of the lazaretto physician \* shall be \$2,500, and the salary of the quarantine master shall be \$2,000, payable quarterly, and no fee shall be received by either of said officers after the passage of this act.

**128.** Between the first day of June and the first day of October, every vessel coming from any port or place southward of Cape Fear, bound to Philadelphia, shall be subject to the examination directed by the fourth section of the act to which this is a supplement, for every vessel coming from any foreign port or place.

And the master or pilot of every such vessel coming from any port or place southward of Cape Fear shall be subject to the same restrictions and liable to the same indictment, prosecution and penalties as by the said fourth section of the said act is prescribed for the master, commander or pilot of any ship or vessel coming from any foreign port or place.

And the same duties shall be performed by the lazaretto physician and quarantine-master, and the same oaths or affirmations shall be by them administered, first making known to the person interrogated the penalty imposed by the said act to which this is a supplement; which penalty is hereby extended to every person who shall give false answers, under oath or affirmation, to the questions proposed under the authority of this act.

And the said physician and quarantine-master, and the master of such vessel, shall proceed in the same manner in all respects as is directed by the said fourth section of the act to which this is a supplement, which penalty is hereby extended to every person, and the

\* Incompatible offices. The resident physician of the lazaretto cannot at the same time hold any office, or appointment of profit or trust, under the United States government. No person shall, at the same time, be a member of more than one of the following bodies, to wit: The city councils, the guardians of the poor, the board of health, and the inspectors of the county prison; nor shall any person be a member of any of these bodies, who is at the same time a salaried officer under the same or any of them.—Act of 15 May, 1874, §§ 1, 8, P. D., 1274, W. D., 307. Under the act of February 2, 1854, controllers and directors of public schools were included in the above list.—See W. D., 307, sec. 36.

board of health shall have the same power to determine and direct what measures shall be pursued, and the same shall be carried in like manner into execution.

129. Between the first day of June and the first day of October, every vessel coming from a port or place in the United States, bound to the port of Philadelphia, and from which vessel shall have been, within thirty days then next preceding, unladen the whole or a part of the cargo or baggage brought, said ship or vessel from some foreign port or place, every such ship or vessel shall be liable and subject to all the rules, regulations and restrictions of the said fourth section of the said act \* \* \* \* to which this is a supplement, and shall be examined and treated, \* \* \* \* as well the vessel itself as the cargo, crew, passengers and baggage on board, in the manner as if such ship or vessel had brought the same cargo, crew, passengers or baggage, directly from such foreign port or place, and had the same then on board at the lazaretto.

130. Between the first day of June and the first day of October, no ship or vessel which shall be laden with or have on board any vegetables, fish or hides, shall be unladen at the port of Philadelphia, until a permit shall be \* \* \* \* applied for and obtained from the board of health. And if any master, captain, owner or consignee or other persons, shall presume to unlade from on board of any such vessel, any vegetables, fish or hides without first having applied for and obtained a permit from the board of health, every such master, captain, owner or owners, consignee or consignees or other person, so offending, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is directed in the act to which this is a supplement.

131. Between the first day of June and the first day of October, within forty-eight hours after the discharge of the cargo of every ship or vessel at the port of Philadelphia, it shall be the duty of the captain or master, owner or owners, consignee or consignees, and other person having the direction of the discharge of the same, under the penalty of one hundred dollars, to be recovered and appropriated as by the act to which this is a supplement is directed, to give or cause to be given to the board of health, notice that the same cargo is discharged, and to permit and suffer the board of health, by themselves or their lawful agent, by them for that purpose appointed, to examine the condition of the hold, ballast and limbers of such vessel. And if the board of health shall deem it for the safety and health of the city of Philadelphia, are hereby authorized and empowered to designate a proper place to which the said ship or vessel shall be taken, and that her hold, ballast and limbers shall be there cleansed and purified; or at the expense of such captain or master, owner, consignee or other person having the direction of the discharge of the cargo, to

2 April, 1821.

*Ibid*, § 2.

Ships from domestic ports subject to examination at certain periods.

*Ibid*, § 3.

Vessels laden with vegetables to obtain permits before landing.

Penalty.

*Ibid*, § 4.

Master, &c., to give notice of discharge of cargo.

And permit examination of hold, &c.

Board may direct vessel to be cleansed.

send such ship or vessel to a proper place, and to have her hold, ballast and limbers cleansed and purified.

29 March, 1824, § 1.  
P. L., 126.  
P. D., 1557.

**132.** All ships and vessels arriving at the port of Philadelphia, with small-pox on board, shall be subject to the same rules, restrictions and regulations, as are provided and directed in the act to which this is a supplement, in relation to ships or vessels arriving with other malignant or contagious diseases. [See the following act.]

5 April, 1849, § 2.  
P. L., 246  
P. D., 1557.

**133.** The general health law passed on the 29th day of January, 1818, shall be taken and construed as if the words "small-pox" had never occurred therein. See P. D., 1549, sec. 63.

29 January, 1827, § 1.  
P. L., 28  
P. D., 1557.

National vessels at  
lazaretto to have  
free communica-  
tion with naval  
asylum.

**134.** A free and unrestricted communication is hereby permitted between the officers and crews of national vessels which may be detained at quarantine at the lazaretto, in the port of Philadelphia, and the naval asylum on the river Schuylkill, any provisions in the act to which this is a supplement to the contrary notwithstanding: *Provided*, That nothing herein contained shall prohibit the board of health from interdicting communication between the said asylum and the citizens of the city of Philadelphia, whenever, in their opinion such interdiction may be necessary.

11 June, 1832, § 2  
P. L., 620.

From and after the first day of July next no health fee shall be charged on any American vessel engaged in the Pennsylvania coal trade.

23 February, 1848, § 8.  
P. L., 19  
P. D., 155.  
W. D., 31.

**135.** No vessel shall be permitted to leave the lazaretto without first giving security, to be approved by the board of health, for the payment of all expenses of said vessel, and of passengers and other persons imported therein, [for] which said vessels, their captains, owners or consignees are by law made liable.

25 March, 1860, § 4.  
P. L., 268.  
P. D., 1558.  
W. D., 31.

Additional visita-  
tion of vessels to  
guard against con-  
tagious diseases.

**136.** For the purpose of more effectually securing the city and port of Philadelphia from the introduction of pestilential and contagious diseases, every ship or vessel arriving from a foreign port shall, in addition to the visitation and examination now prescribed, be visited by the lazaretto physician before passing the lazaretto, or the port physician before being hauled to any wharf within the city or port of Philadelphia, and such lazaretto physician or port physician, as the case may be, shall rigidly examine the baggage, effects and property of the passengers and crew, for which service he shall then receive and pay over to the board of health the sum of fifty cents for each and every person on board such vessel: *Provided*, That in advance of such visit or payment of money, and in lieu thereof the board of health may take security from the master, owner or consignee of the vessel, or importer of or agent for the passengers, conditioned for the payment of all such sums immediately on the arrival of such ship or vessel at the port of Philadelphia. And if any master, pilot, owner or consignee of such vessel, or any other person, shall bring \* \* \* such vessel from the lazaretto, or cause her to be hauled

Fees.

Board may take se-  
curity therefor in  
advance.

Penalty.

to any wharf, before paying such moneys, or giving security as aforesaid, he or they so offending shall for every such offense forfeit and pay to the board of health the sum of five hundred dollars. \* \* \* [The cities of Pittsburgh and Erie possess appropriate quarantine regulations, for which reference must be made to the acts of Assembly. See III, 46, VI, 78.]

25 March, 1850.

## VIII. NUISANCES.—GENERAL POWERS FOR THEIR REMOVAL.

### Offensive Trades, Cesspools, Pollution of Water Supply, Street Cleaning.

137. [The general statutory law on this subject is contained in the act of 23 May, 1874, set forth above under IV, Cities of the Third, Fourth and Fifth Classes. For the general law relating to boroughs, see VI, 68. 69.]

General law.

#### General Powers for Removal of Nuisances.

138. The board of health, or a committee of them, shall have power, having first obtained a warrant from a justice of the peace in due form of law, founded on a complaint of two householders, under oath or affirmation, directed to the sheriff of the county of Philadelphia, or his deputy, to enter and search all houses, stores, cellars and other inclosures, between sunrise and sunset, where they may have just cause to suspect any nuisance to exist: *Provided, however,* That no sheriff or deputy sheriff shall execute any civil process either by arresting the body or attaching the goods and chattels of any person or persons under color of any entry made for the purposes aforesaid, unless such service could by law have been made without such entry; and all services so made under color of such entry shall be utterly void and the officer making such service shall be considered a trespasser. And it shall be the duty of the said board to cause all offensive or putrid substances and all nuisances which may have a tendency, in their opinion, to endanger the health of the citizens to be removed from the streets, lanes, alleys, highways, wharves, docks or any other part or parts of the city of Philadelphia, the district of Southwark and the townships of the Northern Liberties, Moyamensing and Penn., and to cause such of the privies within the limits aforesaid to be emptied or corrected with lime or otherwise at the expense of the individuals who are the owners of the houses to which the said privies are appurtenant, as the board shall from

23 January, 1818, §27.  
P. L., 58.  
W. D., 33.

Power of board of health of Philadelphia to search houses, &c., for nuisances.

Civil process not to be executed under color of such entry.

Nuisances to be removed at expense of owners or occupiers of premises.

29 January, 1818.

Fine in case of neglect.

Board to recover expense of removing nuisances by suit.

time to time deem necessary for the health of the inhabitants thereof. And if the owners or occupiers of the premises on which any nuisance may be found, and the owners of the houses to which the said privies are appurtenant, shall, on due notice thereof, refuse or neglect to have the same immediately removed, emptied or corrected as aforesaid, he, she or they so refusing or neglecting shall forfeit and pay for every such offense any sum not less than twenty nor more than two hundred dollars, to be recovered and appropriated as by this act directed. And the expense attending the removal of such nuisance shall be recovered by the board in any court having lawful jurisdiction from all corporate bodies and individuals, in case due notice has been given to remove the same and a refusal or neglect to do so within the time prescribed by the board.

Private citizens have no right of action for the suppression of a public nuisance unless they aver and prove some special damage to themselves.—*Flanagan v. Phila.*, 8 Phila., 110; *Meckling v. Kittinging Bridge Co.*, 1 Grant, 416; *Fields v. Stokley*, 99 Penn. St., 306; *Yost v. R. R. Co.*, 29 Leg. Int., 85. A court of equity has concurrent jurisdiction with law in cases of nuisance and will proceed by injunction.—*Haugh's Appeal*, 39 Leg. Int., 336. See *Crawford v. Mfg. Co.*, 1 Chester Co., 412. It is no defense to an action for nuisance that the business is necessary and useful to the public.—*Smith v. Phillips*, 8 Phila., 10. Difficulty in removing a nuisance will not excuse its continuance.—*Biddle v. McCracken*, 13 W. N. C., 514.

15 April, 1787, § 11.  
2 Sm., 61.  
W. D., 238.

No length of possession to bar removal of nuisance from a street.

139. No length of possession whatever of any part of any public street or way within the said city encroached upon shall be available to bar or prevent the correction and removal of any nuisance by buildings, enclosures, or otherwise, which have been or hereafter may be erected or made within or upon any street, lane or alley within the said city.

Long-continued use will not give title to a franchise which is an encroachment on a public right.—*Cwlth. v. Phila.*, 16 Penn. St., 79. An act legalizing a public nuisance is liable to be repealed at the pleasure of the Legislature; there can be no vested rights under it.—*Wartman v. Phila.*, 33 Penn. St., 202. So a license to erect that which amounts to a nuisance.—*Reading v. Cwlth.*, 11 Penn. St., 196. A license for the continuance of a nuisance, in consideration of an annual payment, confers no rights after the expiration of the year.—*Gilmore v. Wilson*, 53 Penn. St., 194. The board of health have power to fence a lot, if necessary, for the abatement of a nuisance.—*Wistar v. Addicks*, 9 Phila., 145.

Ibid., § 13 W. D.,  
238.

Regulations relating to the grates over vaults.

140. Every owner or owners of vaults, over which a grate or grates are placed, shall cause the said grate or grates to be made of good iron bars, of one inch square, of eighteen inches long, and so in proportion to the length of the bar, the said bar to be laid crosswise of the street, and the space between the bars not to exceed one inch and a quarter; and the said grate or grates shall be fixed in a frame of stone, or good red cedar, the scantling of which to be at least six inches square for a bar of eighteen inches long, and so in proportion for the length of the bar, the frame to be laid solid on the wall of the opening of the said vault, and the upper side of the frame nearly level with the pavement, the wall of the opening, with the arch of the

vault, and the grate or grates, always to be kept in good repair. And every owner, if a resident within the said city, or tenant of a non-resident owner, who has or may have vaults under any of the public streets, is hereby directed and enjoined to comply with the above regulations, under the penalty of thirty shillings [to be paid to the commissioners for pitching, paving and cleansing the streets, and by them] to be applied toward making, amending and cleansing the same; and the [said commissioners] are hereby directed to make and amend such vaults or grates, which the owners neglect to repair agreeably to this act, out of the public money, and recover the expense thereof, with the forfeiture of such resident owner, or tenant of such non-resident owner respectively, as the case may require, in a summary way, as debts under five pounds are usually recovered. [Office of street commissioners abolished, and the power of providing for the performance of their duties vested in select and common councils.] If any tenant of a non-resident owner shall make or repair the vault, grate or grates, agreeably to this act, it shall be allowed to him by the owner or landlord out of the rent then due, or thereafter to become due.

15 April, 1732.

Office of street commissioners abolished.

In a suit against the city for escape of gas into the cellar, digging a vault beyond the curb, contrary to ordinance, was held to be contributory negligence.—*Strawbridge v. City*, 2 Pennyp., 419. An owner who excavates a cellar, and carries the excavation to the curbstone, for the purpose of constructing a vault under it, is bound to have it securely fenced.—*Homan v. Stanley*, 66 Penn. St., 464.

141. It shall be the duty of the board of health in all cases where the owner or owners of unoccupied property upon which a nuisance, in the opinion of the said board, exists, reside out of the city, districts and townships, subjected to the operation of the act to which this is a supplement, or cannot be found by the messenger of the said board, after diligent search made, to cause the said nuisance to be at once removed, and the expenses attending the removal of the same shall be recovered by the said board in any court, or before any court, alderman, or justice of the peace, having lawful jurisdiction, as in and by the said act is provided.

142. The expenses attending the removal of any nuisance shall be and remain a lien upon the premises from which such nuisance has been removed, and it shall be the duty of the said board of health to file the claim therefor against the owner or reputed owner, in the office of the clerk of the district court for the city and county of Philadelphia, which said court shall, in all cases, have jurisdiction of the same, and the said claims may be filed, recorded and proceeded on by *scire facias* to recover the same, in like manner as mechanics' liens are recoverable, upon the trial of which, the fact of the nuisance shall not be inquired into, and the defendant or defendants shall only be permitted to

7 April, 1830. § 1.  
P. L., 343.  
B. P. D., 101.

Proceedings where owner of premises on which nuisance exists resides out of town.

Ibid, § 2. W. D., 34.

Expenses of removing nuisances to be a lien on the premises.

Upon the trial, the fact of nuisance not to be inquired into.

7 April, 1830.

give evidence of payment, or that unnecessary expenses were incurred by the board in the removal of the nuisance.

The form of the claim is regulated by the mechanics' lien law of 1806 (4 Smith, 300), which was in force at the time of the passage of the act.—*Kennedy v. Board of Health*, 2 Penn. St., 366; *Philadelphia v. Gratz Land Co.*, 38 Penn. St., 359; *Phila. v. Van Vrankin*, 39 Leg. Int., 402. The determination of the board of health as to the fact of the existence of the nuisance is final.—*Kennedy v. Board of Health*, *supra*. But to obtain a valid lien for the removal of a nuisance the board of health must strictly pursue the provisions of the act of 1818; there must be a complaint of two householders and a warrant from a justice.—*Baugh v. Sheriff*, 7 Phila., 82. Where there is no appropriation the city cannot collect from the property owner. The individuals illegally ordering the work are responsible.—*City v. Wistar*, 41 Leg. Int., 15. The advertisement of the sheriff's sale ought, however, to show substantially that the proceedings were under the act of 1830. (See above.)—*Board of Health v. Jones*, 1 Miles' Rep., 28. See P. D., p. 1206, n (b). A lien cannot be filed for the removal of a nuisance caused by the act of the corporation itself.—*Phila. v. Edwards*, 2 W. N. C., 182. But a lot owner is liable for a nuisance occasioned by the filling up of a street in front of his property by the municipal authorities.—*Broomall v. Chester*, 1 W. N. C., 228. The board of health in a suit upon a claim for the removal of a nuisance must prove the gist of the action, to wit, the doing of the work.—*Board of Health v. Pennock*, 1 Clark, 323. But need not state when the work was done.—*Phila. v. Gratz Land Co.*, 38 Penn. St., 359. The lot against which the claim is made must be accurately described. A resolution of the board of health declaring that a nuisance exists on lots north and south of Master, between Broad and Thirteenth streets, will not sustain a claim against a lot at the south-west corner of Thirteenth and Master streets.—*Phila. v. Houseman*, 2 Phila., 349. Corporations other than municipal may be indicted for a public nuisance, and if the grantees of the State permit water to escape through the bank of a canal, and to form noisome pools on adjoining lands of another, they are indictable.—*Canal Co. v. Cwlth.*, 60 Penn St., 367. If two be jointly indicted for a nuisance, and it appear that they acted separately, the jury may convict one and acquit the other.—*Cwlth. v. Milliman*, 13 S. & R., 403. The owner of a town lot is not guilty of a nuisance by filling it up for building purposes though he thereby disturbs the surface drainage.—*Kohn v. Moore*, 4 Leg. Gaz., 46.

7 May, 1841, § 2.  
F. L., 364.  
W. D., 34.

143. The several provisions of the second section of an act entitled "An act to establish the district court of the city of Philadelphia," passed twenty-eighth day of March, eighteen hundred and thirty-five, and of the first section of the supplement thereto, passed eleventh day of March, eighteen hundred and thirty-six, be and they are hereby deemed and construed to extend to all actions of *scire facias* on claims filed, or to be filed, by the board of health, for removing nuisances under the laws of the Commonwealth.

5 April, 1846, § 3.  
P. L., 346.  
W. D., 34.

Board empowered to seize animals and deliver them to guardians of the poor.

144. Whenever any nuisance shall be found anywhere within the jurisdiction of the board of health, by reason of the keeping of hogs or other animals, the board of health, in addition to their power of destroying the pens or other enclosures containing such animals, or of otherwise abating and removing such nuisance, be and they are hereby empowered to seize such animals, and deliver them over as forfeited to "The guardians for the relief and employment of the poor of the city of Philadelphia." for the use of said poor, and it shall be the duty of said guardians of the poor, on notice from the board of health,

to receive the said animals, and pay the expense of their removal: *Provided*, That nothing herein contained shall be construed to interfere with the keeping of well regulated markets for the purchase and sale of cattle, excepting swine.

A pig sty in a city is a nuisance *per se*; and it is no defense that it has been in the same place for a long series of years, and is connected with a large and flourishing manufacture. *Cwlt. v. Van Sickie*, Brightly, 69; *Cwlt. v. Hutz*, Brightly, 75, n.

145. The board of health shall have full power and authority to remove the cause of all nuisances that exist now, or may be hereafter created, in the same manner and by the same authority as the existing laws now authorize them to remove all nuisances.

146. All and singular the powers and authorities now conferred by law on the board of health, in the city of Philadelphia, in respect to the removal of nuisances, be and the same are hereby extended to all property situate on any public highway of the said city, and all laws inconsistent herewith are hereby repealed: *Provided*, That to authorize any such removal, the alleged nuisance shall be located within one hundred yards of some dwelling-house.

#### Offensive Trades.

(SEE ALSO XV. EXPLOSIVES).

147. No person shall distil or boil any turpentine or oil, or manufacture or boil any varnish in any house, shop, cellar or other place, to the eastward of Tenth street, in the city of Philadelphia, or within the district of Southwark, or within that part of the township of Moyamensing situate between South street, Seventh street and Passayunk road, or within the incorporated limits of the Northern Liberties, and including the village called Spring Garden, unless the said distilling, boiling or manufacturing be carried on in an open place at least thirty feet distant from any building, vessel of commerce, or other property, which might be injured thereby, or in a completely fire-proof building, the sufficiency of which fire-proof shall be determined and agreed upon by at least five respectable master bricklayers of the said city, who shall certify the same under their hands, under the penalty of forfeiting the whole quantity of the articles so distilled, boiled or manufactured, together with the sum of two hundred dollars for every such offence.

148. Any alderman of said city, or any justice of the peace in the district of Southwark, the township of the Northern Liberties, or the township of Moyamensing aforesaid, respectively, on information lodged, and demand made by any person, showing a reasonable cause, on oath or affirmation, shall issue his warrant under his hand and seal, empowering any constable of the said city, or district, or proper township, to search any house, shop, cellar or other place within the limits aforesaid,

5 April, 1849.

But this act not to interfere with well regulated markets.

*Ibid*, § 5.

Board may remove cause of nuisances.

4 April, 1866, § 1.

P. L., 487  
B. P. D., 102.

Extension of powers of board of health in the removal of nuisances.

16 March, 1869, § 1.

5 Sm., 27  
B. P. D., 917

Manufacture of turpentine, oil and varnish in Philadelphia regulated.

Penalty.

*Ibid*, § 2.

Constable may search for, seize and remove such articles.



18 March, 1809.

where the said articles are alleged to be distilled, boiled or manufactured, and the said constables upon finding such distillery, boiling of oil, or manufacture to be then going on, may seize and remove the said articles thereupon within the space of twenty-four hours, to some safe and convenient place, and therein detain the same until it be determined in the proper court whether the same be forfeited or not, by virtue of this act.

Ibid, § 3.

Penalties how recoverable.  
To go one-half to guardians of poor, one-half to informer or prosecutor.

149. The penalties and forfeitures mentioned in this act may be recovered as debts of equal amount are by law recoverable, with costs of suit, the one moiety of which penalties and forfeitures shall go to the guardians of the poor of the city of Philadelphia, the district of Southwark, and the township of the Northern Liberties, or to the overseers of the poor of the township of Moyamensing, respectively, according as the said seizure was made within the said city or district, or either of the townships aforesaid, and the other moiety to the informer or prosecutor who shall sue for the same.

Ibid, § 4.

Defendant may recover treble costs.

150. If any suit or action be commenced and prosecuted against any person or persons, for anything done in pursuance of this act, every such person or persons may plead the general issue, and give this act and special matter in evidence, and if a verdict shall pass for the defendant, or the plaintiff become non-suit or discontinue this action, or if on demurrer or otherwise, judgment shall be given against the plaintiff, the defendant shall recover treble costs.

2 May, 1856, § 1.  
P. L., 391.  
B. P. D., 802.

Bone-boiling establishments erected without permission of board of health liable to fine and indictment.

151. From and after the first day of July next, no bone-boiling establishment, or depository of dead animals, shall be kept or erected within the limits of the city of Philadelphia, without permission of the board of health of said city, which is hereby authorized, under the control of the councils of said city, to make all necessary regulations therefor; and every person offending against the provisions of this act shall, for every such offence, and each month's continuance of the same after notice, forfeit and pay to the city of Philadelphia the sum of fifty dollars, to be recovered as debts of that amount are by law recoverable, and also be liable to indictment at common law for creating and maintaining a nuisance.

18 May, 1857, § 1.  
P. L., 533.  
W. D., 290.

Bone-boiling establishments forbidden.

152. No bone-boiling establishment or depository of dead animals, shall be erected within the bounds, in the First division, as now laid out in the present plan of the city, of the First ward, of the city of Philadelphia, and all such establishments and depositories within said ward are hereby declared a public nuisance, and punishable as such.

22 March, 1865, § 1.  
P. L., 564.  
B. P. D., 803.

No bone-boiling establishment to be erected in 1st or 26th wards of Philadelphia.

153. No bone-boiling establishments or compost manufactory, or depository of dead animals, shall be erected within the bounds of the First ward and of the Twenty-sixth ward of the city of Philadelphia; and all such establishments and depositories within the limits aforesaid, are hereby declared a public nuisance; and

the board of health of the city of Philadelphia are hereby empowered to enter the premises wherein such nuisances exist, and destroy the sheds, or inclosures, used for such purposes, and to seize and sell the implements and utensils used in the bone-boiling establishments, or compost manufactory so entered; the net proceeds whereof to be paid over to the said board, for the use of the city of Philadelphia: *Provided*, That this act shall not take effect until first of June next.

154. It shall not be lawful for any person, or persons, firms, companies, or corporations, to maintain, or to establish, any bone-boiling establishments, or place for boiling dead animals, in that part of the city of Philadelphia west of the river Schuylkill, and now known as the Twenty-fourth ward.

155. It shall not be lawful for any person or persons, body or bodies corporate, to own, occupy, or possess, in the district of Moyamensing, in the county of Philadelphia, any poudrette pit, or pits, or deposit places of any kind or description, for the deposit of poudrette or privy filth; any person, or persons, erecting or sinking, or causing to be erected or sunk, or owning any poudrette pit or pits, or deposit places for poudrette or privy filth in the said district, shall forfeit and pay for every such offense, and for every month that the same shall remain in said district, the sum of five hundred dollars, to be recovered by an action at law, in the district court of the county of Philadelphia, in the name of the commissioners and inhabitants of the district of Moyamensing, one-half of which penalty shall be paid over to the treasurer of the county of Philadelphia, for the school fund of said county, and the remaining one-half shall be recovered for the use of said district

22 March, 1865.

Board may break up such establishment, and sell implements.

3 April, 1866. § 1.  
P. L., 418.  
B. P. D., 903.

18 April, 1863. § 9.  
P. L., 576.  
W. D., 260.

Poudrette pits forbidden in districts of Moyamensing.

Penalty.

"A glass house, a chandler shop, a swine yard, a pig sty, a pig boarding house, a soap factory, a tallow furnace, a slaughter house, a bone-boiling establishment, a horse-boiling establishment, a mill dam, a melting house of animal fat and tallow, a cotton press, finishing steam boilers, the use of a public place for immigrants, brick burning, laying up wet jute, storing wood naphtha, gun powder, petroleum or nitro-glycerine, a lime kiln, a dye house, a furnace, a smelting house, a smith forge, a livery stable, a tannery, gas works—all are or have been declared nuisances. Some are nuisances *per se*, others are nuisances according to the locality in which they are placed. In offensive trades either smell or noise may create a nuisance. In dangerous trades the imminent risk of fire or explosion may be sufficient. Carrying on an offensive trade for twenty years in a place remote from buildings and public roads does not entitle the owner to continue it in the same place after houses have been built and roads laid out in the neighborhood, to the occupants of which, and the travelers upon which, it is a nuisance. As the city extends, such nuisances should be removed to the vacant grounds beyond the immediate neighborhood of the residences of the citizens. This, public policy, as well as the health and comfort of the population of the city, demand."—Read, J., in *Rhodes v. Dunbar*, 7 Sm., 275.

A bone boiling establishment is a public nuisance and if carried on in a populous part of a city will be restrained by injunction; though, when first erected, the neighborhood was sparsely settled, *Smith v. Cumming*, 2 Parsons. 92. So the manufacture of fertilizers producing nauseous odors.—*Roberts v. Thomas*, 13 Lancaster Bar, 62. Lead smelting works may be a nuisance for which an injunction will be granted.—*Penna. Lead Co's Appeal*, 96 Penn. St., 116. But

18 April, 1853.

not the use of bituminous coal for generating steam in a mill, though it covers the plaintiff's houses and yards with dirt, soot and noxious vapors.—*Galbraith v. Oliver*, 3 Pittsburgh, 78. The erection of an abattoir on an improved plan, in a populous city, will not be enjoined, unless the affidavits establish the fact of nuisance; but the court will retain the bill.—*Sellers v. Penna. R. R. Co.*, 10 Phila., 319. Brick burning is not a nuisance *per se*, and it does not necessarily follow that it will be enjoined, because it may produce discomfort or injury to those living near it.—*Hackenstine's Appeal*, 70 Penn. St., 102. So an oil refinery in a rural part of a city.—*Young v. Elkins*, 38 Leg. Int., 204. As to erection of slaughter house, etc., near a cemetery, see XIV, 324, n.

### Cesspools.

6 April, 1852, § 1.  
P. L., 312.  
B. P. D., 804.

Depositing privy filth within districts of Kensington and Richmond forbidden.

Penalty.

16 March, 1855, § 5.  
P. L., 80.  
B. P. D., 804.

Persons depositing contents of privy well so as to create nuisance, subject to fine and liable to indictment.

156. No privy filth shall be deposited within the Kensington and Richmond districts, in the county of Philadelphia, or outside of said districts, at any place within a mile of the boundary line of the said districts, and any such deposit is hereby declared to be a nuisance, and the party or parties depositing or procuring or causing the same to be deposited, to be guilty of a misdemeanor, and on conviction thereof by the court of quarter sessions for the county of Philadelphia, such party or parties shall, for each offence, be sentenced to pay a fine of not less than twenty dollars nor more than one hundred dollars, or by non-compliance be imprisoned in the Moyamensing prison for a period not less than thirty days nor more than six months.

157. If any person or persons shall deposit the contents, or any part thereof, of a sink or privy well, anywhere within the limits of the jurisdiction of the board of health, so as thereby to create and maintain a nuisance, or shall deposit or spill the same on any street, lane, alley, court, road, bridge, or other highway of the city and county of Philadelphia, such person or persons so offending shall for every such offence forfeit and pay to the board of health the sum of ten dollars \* \* \* and shall also be liable to indictment at common law for creating and maintaining a nuisance.

A privy well which leaks into the adjoining property is a nuisance *per se*, without regard to the question of negligence.—*Jacobs v. Worrell*, 15 Leg. Int., 139. A cesspool which contaminates the well of an adjoining property is a nuisance, not justified by necessity.—*Haugh's Appeal*, 102 Penn. St., 42. If the landlord demised the premises with a cesspool so located that its use by the tenant would naturally result in a nuisance, the landlord will be liable.—*Fow v. Roberts*, 16 W. N. C., 307; 108 Penn. St., 489. Where the board of health, in removing the nuisance of a foul privy had inserted new appliances, instead of merely removing, the municipal claim therefor was sustained.—*Phila. v. Stewart*, 16 W. N. C., 98.

16 March, 1855, § 1.  
P. L., 80.  
B. P. D., 106.

License necessary to clean privy wells.

158. No person shall remove, or cause or allow to be removed, the contents of any privy well or sink within the limits of the jurisdiction of the board of health without first being licensed by the board of health to do so, and every person offending against the provisions of this section shall, for every such offense, forfeit and pay to the board of health the sum of fifty dollars, to be recovered as debts of that amount are by law recoverable, and also be liable to indictment at common law for creating or maintaining a nuisance.

159. Every person desirous of being licensed to empty or remove the contents of privy wells and sinks within the limits of the jurisdiction of the board of health shall make application in writing to the board of health, who, on being satisfied with the character of the applicant, and the security and tightness of his carts, and that he is the owner of such horses and carts as represented in his application, and that he is not in collusion or combination with other persons to deceive and defraud the board, may, under such rules and regulations as they may make in regard thereto, both as to their own protection from fraud and imposition by such person, and as to their supervision and control of such person in his said vocation, grant him a license for one year, and renew the same from year to year, as they may deem proper, and for each license so granted, and every renewal thereof, he shall pay therefor to the board of health the sum of fifty dollars; and whenever any such person shall desire, under his license, to empty or cleanse any privy well or sink he shall first take from the board of health a permit to do so, at which time he shall furnish to the clerk the name of the owner, agent or occupant of such property as shall have so employed him, and the name of such owner, agent or occupant shall be mentioned in said permit and recorded in the office, which permit shall particularly specify the privy well or sink to be emptied or cleansed, and the days or hours in which it shall be done; and if any such person shall, by himself, his agents or servants, remove, cause, or allow or assist in removing the contents of any privy well or sink within portions of said city not excluded from the operation of this act, without having first obtained such permit, or shall do so on any other day or days or at any other hour or hours than those specified in such permit, he shall for every such offense forfeit and pay to the board of health the sum of twenty-five dollars: *Provided*, That nothing herein or in any other act contained shall prevent farmers and others living in rural sections from cleansing their privies without any license and without any penalty therefor.

160. The price of the permit shall be paid to the board of health when issued, and shall in all cases be repaid by the person or persons whose privy well or sink shall be emptied or cleansed, and when such work shall be done by order of the board of health to any premises declared a nuisance, the price of the permit shall also be recovered by the board of health as part of the expenses of the removal of such nuisance.

161. The price of each permit issued in the months of June, July, August and September shall be five dollars; the price of each permit issued at other times shall be fifty cents, except in cases declared by the board of health to be a nuisance, when the price of a permit in those eight months shall be one dollar: *Provided*, That in all cases of permits for removing the contents

16 March, 1855, § 2.

Persons wishing license to apply in writing.

Must own his horses and carts.

License granted for one year; renewable from year to year.

Permit required for each job.

Penalty for violation.

Exception in favor of farmers, &c.

*Ibid*, § 2.

Price of permit to be repaid by the person for whom work is done.

*Ibid*, § 4.

Price of permit.

16 March, 1835.

Ibid, § 6.

Every licensed person to give bond in \$250.

Board may revoke license for cause.

Ibid, § 7.

Penalty for employing unlicensed scavenger.

1 May, 1879, § 1.  
P. L., 44.  
B. P. D., 107.

Price of permit in cities of the first class to be fifty cents and a dollar.

8 April, 1867.  
P. L., 938.  
B. P. D., 108.

30 June, 1835, § 1.  
P. L., 250.  
B. P. D., 103.

Regulation of house drainage in cities of first class. Plumbers to be regulated.

No cesspool permitted to drain into a sewer.

of privies and sinks which are in the way of building or of improvements, as also for removing the contents of all privies and sinks that have accidentally become a nuisance, the charge for a permit shall be at all times fifty cents. [But see act of 1 May, 1879, P. L., 44, § 1, below, 164.]

162. Every licensed person shall give bond to the city of Philadelphia, for the use of the board of health, with surety, in the penalty of two hundred dollars, to be approved by the board, conditioned for the faithful performance of all duties enjoined by this law and the regulations of the board of health, and for the payment to them of all sums by this act directed to be paid to them; and the board of health shall in addition have power, by a vote of the majority of the whole number of members of the board, to revoke or suspend any license for good cause shown.

163. Every person in the city or county of Philadelphia, whether owner, agent, or occupant of property, who shall employ or contract with any unlicensed person to cleanse his or her privy well or sink, or who shall receive from any unlicensed person any portion of the contents of a privy well or sink emptied and cleansed within the limits of the jurisdiction of the board of health, shall for every such offence forfeit and pay to the board of health the sum of twenty-five dollars \* \*

\* \* \*

164. In all cities of the first-class, in this Commonwealth, the price or sum charged and collected by the board of health for each permit to remove the contents of privy wells or sinks, shall be fifty (50) cents during the whole year, excepting in cases declared by the board of health to be a nuisance, when in said cases the price or sum shall be one dollar.

See sec. 4 of the preceding act.

165. It shall not be lawful for any person, or persons, occupying any house or houses, in the city of Philadelphia, at rent, or otherwise, and not being the owner, to deposit any ashes, rubbish, bricks, stones, or cinders, in any privy well attached to such premises; any person, or persons, convicted in the court of quarter sessions of the county of Philadelphia, for any violation of the provisions of this act, shall be punished by a fine not exceeding five hundred dollars, or imprisonment for a period not exceeding two years, in the discretion of the court.

166. Boards of health in cities of the first-class shall be and they are hereby authorized and directed to adopt and promulgate suitable rules and regulations, for the construction of house drainage and cesspools, and to provide for the registration of master plumbers and persons engaged in the plumbing business in said cities: *Provided*, That no cesspools shall be permitted to drain into a sewer: *And further provided*, That nothing in this act shall be construed to apply to cesspools in ex-

istence at the present time or their connection with, or drainage into any sewer.

30 June, 1885.

167. They shall also establish a system of inspection and supervision over all house drainage and cesspools, and ventilation of the same, and appoint such inspectors as in their judgment may be necessary, at such compensation as may be approved by the councils of said cities.

Ibid, § 2.

Inspectors to be appointed.

168. Any person who shall refuse or neglect to comply with the requirements of said rules and regulations when promulgated, shall be guilty of a misdemeanor, and, on conviction, be sentenced to pay a fine of not more than one hundred (100) dollars, or undergo an imprisonment not exceeding one year, or both in the discretion of the court.

Ibid, § 3.

Violation of said rules a misdemeanor.

Penalty.

This act was held to be constitutional by the court of quarter sessions of Philadelphia county, Arnold, J., in the case of *Cwlt. v. Lambrecht*, 6 May, 1887, which was an indictment for carrying on the business of plumbing without being registered. The indictment was, however, held defective in not stating that the defendant was a *master* plumber. Under the powers vested by this act, the board of health of Philadelphia promulgated an elaborate set of rules and regulations, February 23, 1886. See B. P. D. 103,n.

### Pollution of Water.

169. If any person or persons shall throw, cast, or wilfully suffer to fall into the head-race of the water-works at Fairmount, or into the water of the river Schuylkill, between the south line of Francis street and the head arches of the said works, or into either of the reservoirs on Fairmount, any dead animal, or any putrid and corrupt thing whatsoever, or any noxious or offensive matter of any kind, or if any person shall go in to swim or bathe in the said race, or either of the said reservoirs, or within the distance of one hundred yards of the said head arches, or shall entice, throw, lead, or conduct any dog or animal therein, every such person shall forfeit and pay a like sum of money, to be recovered in like manner, with costs of suit, before any justice of the peace of the county, or before any alderman of the city of Philadelphia, for the uses aforesaid. (The sum mentioned as a penalty in section one of this act is a sum of not less than five dollars, nor more than fifty dollars, at the discretion of the magistrate.)

12 April, 1828, § 2.  
P. L., 315.  
B. P. D., 808, 816.

Polluting the Fairmount reservoirs in any way prohibited.

170. If any person or persons shall wilfully take, lead, conduct, carry off, or throw, or shall cause to be taken, led, conducted, carried off, or thrown into that part of the river Schuylkill which is between the dam at Flat Rock and the dam at Fairmount, near the city of Philadelphia, any carrion or carcass of any dead horse or other animal, or any excrement or filth from any slaughter-house, vault, well, sink, culvert, privy or necessary, any offal or putrid or noxious matter, from any dye-house, still-house, tan yard, or manufactory, or any matter or liquid calculated to render the water of said river impure; every such person shall, for each

7 February, 1882, § 1.  
P. L., 55.  
B. P. D., 844.

Pollution of Fairmount dam with carrion, filth or noxious matter from manufactories prohibited.

7 February, 1832.  
Penalty.

and every such offence, forfeit and pay a sum not less than five dollars, nor more than fifty dollars, at the discretion of the magistrate, to be recovered, with costs of suit, in the same manner as debts under one hundred dollars are by law recoverable, by any person who shall sue for the same, before any justice of the peace within the county of Philadelphia, one-half to the use of the person prosecuting and suing, and the other half to the use of the mayor, alderman and citizens of Philadelphia.\*

*Ibid.*, § 2.  
No length of possession to bar conviction of a nuisance.

171. No length of possession whatever shall be available to bar or prevent the correction or removal of any nuisance existing, or which may hereafter exist, at or near that part of the river Schuylkill which is between the dam at Flat Rock and the dam at Fairmount.

The following charge, by Judge Thayer of Philadelphia, in the case of *Commonwealth v. Soulas, et al.*, November 25, 1834, is a valuable exposition of the law on the subject of the pollution of water used for drinking purposes: "The case which you are engaged in trying is one of much importance. \* \* \* \* The facts which have been proved on behalf of the Commonwealth are few and simple. They are, however, very weighty, and it is my duty to add, have not been contradicted. The law also upon this subject is very plain. The defendants are charged in this indictment with maintaining a common nuisance by causing the excrement and foul water from the water-closets and urinals upon their premises, which are situated upon the bank of the Schuylkill river just above the confluence of the Wissahickon with that stream, to be drained into the river. It has been shown by witnesses, some of whom are experts in such matters, that the effect of this has been to pollute the drinking water of this city, and to render it unwholesome and dangerous. Such pollution has also been shown, by competent and credible evidence, to have a direct tendency to produce disease in those who drink the water \* \* \* \* from the Schuylkill. Now, it is a very old and well settled law that to pollute a public stream is to maintain a common nuisance. It is not only a public injury, but it is a crime, a crime for which those who perpetrate it are answerable in a tribunal of criminal jurisdiction. An act of Assembly forbids and punishes as crimes all common or public nuisances, and I know of no public nuisance more serious in its evil effects and more obnoxious to the denunciation of the law than to corrupt and poison a public stream from which large numbers of people obtain their drinking water. If the jury, therefore, find that the defendants have done the acts charged against them in this indictment, no doubt, whatever, remains that they are guilty of the offence of maintaining a common nuisance, and ought to be convicted. If the water drained from the defendants' establishment into the river is of a foul and impure character, and if the effect of that is to pollute the water and render it unwholesome for drinking purposes, then they are guilty as they stand indicted, and it is your duty to say so. It is no defence to say that the premises are in the same condition, and the drainage conducted in the same manner as when they obtained possession and began their occupancy. Their continuance of the nuisance is itself an offence against the law for which they are personally responsible. The law is perfectly well settled that no man can prescribe for a public nuisance, or defend himself by showing that others have violated the law before him. No length of time can justify a public nuisance, although it may furnish an answer to an action for the private injury. Public rights are not destroyed by private encroachments, no matter how long they have endured. Nor is it any defence that the river is also polluted from other sources, that impurities flow into it from sewers, and from towns and places above Manayunk. If the defendants have contributed to the pollution, they are guilty. No man can excuse himself for violating the law upon the ground that others also violate it. It is said that the city ought to have built an intercepting sewer. But what of that? Perhaps it

\* An action lies for the erection of anything (as a tan-yard) in the upper part of a stream, which renders the water offensive and unwholesome. *Howell v. McCoy*, 3 Rawle, 256.

ought. But if the city has been guilty of negligence in that respect that fact does not justify the defendants in their violation of the law. It makes no difference whatever in the guilt of the defendants that the city has not taken steps to protect itself against the unlawful acts of those who pollute the stream. Nor ought your verdict to be affected in the slightest degree by the suggestion that if these pollutions of the river are stopped by indictments and convictions, the effect may be injurious to large business interests, which are prosecuted under similar conditions upon the river. You have nothing to do with that. Such considerations cannot affect your duty in the present case. The law is to be enforced, and those who violate it are to be punished, no matter what the effect of that may be upon their business, for the law is above every personal and private interest. All persons engaged in business are bound to conduct that business in subordination to the law, and in such manner as not to injure the public. It has been argued also that the city ought to have resorted to a civil remedy against the defendant for the correction of these abuses, that it ought to have gone into a civil court and asked for an injunction against their continuance. Such suggestions have nothing to do with the case. It is sufficient that the defendants are arraigned by the Commonwealth to answer for an infraction of her laws. If they have broken those laws, they are in the proper tribunal to answer for their acts. Civil proceedings are slow, and in such proceedings, where the parties are private persons or corporations, \* \* \* many embarrassing and dilatory questions might obstruct and hinder the speedy abatement of the nuisance. In my judgment the remedy which has been chosen is the speediest and the most effective. It is a proper and lawful remedy, and you have no concern now with any other \* \* \* See Mayor v. Commissioners, 7 Penn. St., 354; City v. Carmany, 18 W. N. C., 152; Coal Co. v. Sanderson, 18 W. N. C., 181.

7 February, 1882.

### Water Supply.

172. Any city, or borough, desiring to erect water works, or to improve its water supply, may, for such purpose appropriate streams, known as rivers or creeks, lands, easements and rights of way, whether within its territorial limits or not, and, for the purpose of conducting water obtained outside of the territorial limits of any city or borough, may lay pipes across, under and over any lands, rivers, streams, bridges, public highways and cross railroads.

25 May, 1887, § 1.  
P. L., 287.  
P. D. 2194.

Appropriation of  
streams, lands, &c.,  
for water works or  
supply, authorized.

Prior to any appropriation the city or borough shall attempt to agree with the owner as to the damage done, or likely to be done, to him; if the parties cannot agree, or the owner cannot be found, or is not *sui juris*, the said city or borough may file its bonds in the common pleas court of the county, conditioned for the payment to the owner or owners of the property appropriated of the damages for the taking thereof when the same shall have been ascertained according to law; upon the approval of the bond and its being filed, the right of the corporation to enter upon the property or rights intended to be appropriated shall be complete. Upon petition of either the property owner or the city or borough at any time thereafter the said court shall appoint five disinterested freeholders of the county to serve as viewers to assess the damages proper to be paid to the owner for the property or rights appropriated, and shall fix a time for their meeting, of which notice shall be given to both parties. When the report is filed either party may appeal and have a jury trial as provided by law.

Ibid, § 2.

Agreement as to  
damages.

Viewers may be ap-  
pointed on petition  
of either party.

Meeting of viewers.

Appeal and jury  
trial.



29 April, 1874, § 24.  
P. L., 93.  
P. D., 1879.

Penalty for injuring water-works.

173. If any person shall wilfully or maliciously do, or cause to be done, any act or acts whatever whereby any building, construction, reservoir or works of said company, or any water or gas pipe, \* \* \* or any matter or thing appertaining to the same shall be stopped or obstructed, injured, contaminated or destroyed, the person or persons so offending shall be considered guilty of a misdemeanor, and may therefor be indicted in the court of quarter sessions of the proper county, and on conviction thereof shall be punished by a fine not exceeding five hundred dollars or be imprisoned not exceeding one year, or both, at the discretion of the court.

28 April, 1876, § 4.  
P. L., 81.  
P. D., 1876.

Penalty for injuring watering troughs.

174 Whenever any watering-trough is erected for the purposes aforesaid [watering horses and cattle] the same shall be public property; and any person or persons wantonly destroying or injuring the same shall be liable to a prosecution before any justice of the peace of the proper county, and if duly proven to the satisfaction of the said justice, shall be punishable by a fine not exceeding twenty dollars, and upon refusing to pay the same, together with the costs thereof, may be by the said justice committed to the prison of the county for a period not exceeding ten days.

### Street Cleaning.

18 March, 1880, § 1.  
P. L., 897.  
B. P. D., 108 n.

In Philadelphia board of health invested with all powers over cleaning of streets, &c.

Above powers transferred to department of highways.

Ibid, § 2.

Shall make all contracts for street cleaning, and advertise for proposals.

175. From and after the passage of this act, the board of health of the city of Philadelphia, shall have all the powers now vested in the select and common council of the city of Philadelphia, and in the mayor, and board of select and common council, jointly and severally, and in the highway department of said city, relating to the cleaning of streets, markets, and public highways of the said city, and the removal of ashes, garbage, refuse and dead animals from the same. [By ordinance of 24th December, 1881, §1, 292, all such powers and duties are imposed upon the department of highways.]

176. Said board of health shall have full power and authority to make and enter into all contracts for cleaning of the said streets and the removal therefrom sweepings, manures, ashes, garbage, offal and refuse, and shall advertise in not less than two daily papers published in the city of Philadelphia, for a period of ten days, commencing within twenty days after the passage of this act, for proposals, accompanied with specifications, showing how often and in what manner the proposed work is to be done, and for such periods, not exceeding three years \* from the date of contract; proposals shall be opened at the time and place fixed in said notice, in the presence of the board of health, or a majority thereof, and in the presence of the finance committee, or such of them as may see proper to attend;

\* Now one year by act 11th June, 1879, §§ 1 and 3, P. L., 130.

and the contract shall be awarded to the lowest and best bidder, to be approved by the majority of said board of health and a majority of said finance committee as may be present.

15 March, 1869.

Contract to be awarded to lowest and best bidder.

A contract for cleaning the streets in pursuance of an ordinance, must be awarded to the lowest bidder, after advertisement. *McKinley v. Phila.*, 6 Phila., 123.

177. The contractor or contractors shall enter into such security for the faithful performance of said work, in such sum or sums, and in such manner, as shall be approved by the aforesaid board of health, or a majority of them; and in case such contractor or contractors shall fail to perform the duties required by such contract for a period of twenty-four hours after notice duly served upon him or them, said board of health shall have power to have said work done, and the expense thereof shall be charged to such contractor or contractors, and shall be deducted from amount due them; said contracts shall be submitted to and approved by the city solicitor.

*Ibid.*, § 3.

Contractors to enter security in such sums as the board decide.

Contracts to be approved by city solicitor.

*Ibid.*, § 4.  
W. D., 36.

Contractors to have free use of public hydrants.

178. The water department of the city of Philadelphia shall, under a supervisor of the board of health, grant to the aforesaid contractor or contractors, the free use of the water from the public hydrants of the said city, for the purpose of sprinkling the streets in cleaning the same.

179. Said contract or contracts shall be paid by the city treasurer, in equal monthly payments, upon warrants drawn by the aforesaid board of health; and the mayor, select and common council of the city of Philadelphia are hereby authorized and directed to provide for the expenses authorized by this act in their respective annual tax levies.

*Ibid.*, § 5.  
W. D., 36.

Expenses authorized by this act. how met.

## IX. DRAINAGE AND SEWERAGE.

### Swampy Lands.

180. The city of Philadelphia shall have power to construct sewers in the streets of the said city, and to charge therefor the sum of [one dollar and fifty cents]\* for each linear foot against each front, the same to be recovered as liens for the laying of water pipe are recovered in said city, and with the same allowance for corner lots.

8 April, 1864.  
P. L., 324.  
B. P. D., 29.

Construction of sewers in Philadelphia.

181. The city of Philadelphia shall have power to construct sewers or drains in the streets of said city and to charge the sum of [one dollar and fifty cents]\* per linear foot against each front; the same to be recovered

27 March, 1865, § 1.  
P. L., 791.  
B. P. D., 29n.

Liens for sewers same as for water pipe.

\*By ordinance 16 Feb., 1869, 47.

27 March, 1805.

In case of property owner neglecting to pay assessment, tenant may do so.

30 March, 1806, § 1.

P. L., 851.  
B. P. D., 29.

Councils to fix charges and rates hereafter.

10 April, 1807, § 1.

P. L., 1111.  
W. P. D., 161.

Cost of making sewer connections to be a lien on premises.

20 April, 1806.

P. L., 1190.  
B. P. D., 29.

Councils to have power to construct branch sewers wherever approved by board of surveys.

as liens for the laying of water pipe are now recovered in said city, and with the same allowance for corner lots; and from the passage of this act it shall be lawful for any tenant of any property, wherever the owner or owners of property so assessed for the construction of any sewer or drain, as aforesaid, neglect or refuse to pay the said assessment, the tenant of such property owner may pay the assessment against such property to the contractor, and hand the receipt thereof to the property owner as so much cash paid for rent, as tenants are now required to pay taxes for delinquent property owners.

**182.** All acts or parts of acts which limit the charges made by said city, for the construction of sewers, for paving and for the laying of water pipes, so far as said limitations are concerned, be and the same are hereby repealed; and hereafter all the said charges and rates shall be fixed from time to time, by ordinance of councils.

**183.** Whenever, in pursuance of an act of Assembly, or of an ordinance of the city of Philadelphia, any lot or premises, in said city, shall be connected with the sewers thereof, the entire cost of making such connections shall be a lien upon said lot or premises, in the same manner as the charges or assessments for sewers are by law a lien upon real estate in said city; and the liens therefor may be filed and collected in the same manner as liens for the said sewer charges or assessments are now filed and collected.

**184.** The select and common councils of the city of Philadelphia shall have power and authority to order and direct the construction of branch sewers in said city whenever the same shall be approved by the board of surveys, and in the opinion of councils shall be required for the health, comfort or convenience of the inhabitants of said city, and the provisions of the act, entitled "A further supplement to the act to incorporate the city of Philadelphia," approved April eighth, one thousand eight hundred and sixty-four, \* shall not be construed so as to apply to the same.

A municipal corporation has power to construct sewers and regulate the use of them without any special statutory authority.—*Fisher v. Harrisburg*, 2 Grant, 291. Councils are the exclusive judges of the question whether the construction of the sewer is requisite to the health, comfort, and convenience of the inhabitants.—*Wain v. Phila.* 11 W. N. C., 314. Where a corporation constructs a sufficient culvert it is not responsible in damages, by reason of its subsequently becoming insufficient to carry off the water from an extraordinary fall of rain, in consequence of the increase of population and the greater extent of territory graded and built upon.—*Carr v. Northern Liberties*, 35 Penn. St., 324; *Fair v. Phila.*, 88 Penn. St., 309; *Collins v. Phila.*, 93 Penn. St., 272. But the city is bound to construct its sewer properly and keep it in good condition and repair, and negligence in the performance of these duties will render it liable. The omission to make examination is negligence.—*Vanderslice v. Phila.* 103 Penn. St., 103; *Kibele v. Phila.*, 14 W. N. C., 393. A municipal corporation may connect

\* It is the proviso therein, requiring the consent of property owners to the construction of branch sewers, which is repealed.

its sewers with a natural channel for the flow of water without incurring any liability to keep that channel open to its mouth.—*Munn v. Pittsburgh*, 40 Penn. St., 364. The city has no right to construct a sewer in a private alley not dedicated to public use.—*McClintock v. Allegheny*, 33 Leg. Int., 410. The city has no right to drain other than surface water into a small stream running through private property.—*Albertson v. Phila.*, 12 W. N. C., 158. The city may construct a sewer, which empties into a private drain, and assess the property owner for the cost thereof.—*Phila. v. McNeely*, 7 W. N. C., 573; *Phila. v. Church*, 1 W. N. C., 299. Where a stream is directed to be culverted, a contractor for grading the street will not be permitted to fill it up until the culvert is built.—*Sanger v. Phila.*, 10 Phila., 338.

20 April, 1900.

185. Cities of the third, fourth and fifth classes, coming under the provisions of this act in their corporate capacities, are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act :

23 May, 1874. § 20.  
P. L., 237.  
P. D., 1218.

Powers of cities  
over streets and  
sewers.

186. To open and improve streets, avenues and alleys, make side walks and build bridges, culverts and sewers within the city.

187. The city council of any city of the third, fourth and fifth classes may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the costs and expenses of constructing any main sewer, or reconstructing the same, and to report to the council what portion of said costs and expenses is required for main sewerage, and what portion of the same is required for local sewerage, for any lots and lands to which any portion of such main sewer to be designated by the council, shall serve as a local sewer. And it shall be lawful for the city councils to provide for assessing the costs and expenses of such main sewerage upon the lots and lands within the sewer district where the work is to be done, according to the valuation of the same on the city duplicate, or according to benefits, as they shall determine by ordinance in each case, and to provide for assessing the expenses of such local sewerage upon the feet front of lots and lands, by or through which such portion of any main sewer shall pass, or according to the valuation of the same upon the duplicate aforesaid, or in proportion to benefits upon lots and lands benefited by the local sewerage aforesaid, as they shall determine by ordinance in each case; and if they determine to make an assessment for main or local sewerage or both, according to the benefits, they shall appoint five disinterested freeholders, who, or a majority of them, shall assess the estimated expense of such main sewerage on all the lots and lands in the sewer district, wherein the sewer is to be constructed or reconstructed, in proportion, and the estimated expenses of such local sewerage on such lots and land as will, in their opinion, be benefited thereby, whether fronting on the public ground in which the sewer is to be constructed or reconstructed or not, in proportion, as nearly as may be to the benefits which may result to each lot or parcel of land. Said assessors, or a majority of them, shall, within

23 May, 1874. § 47.  
P. L., 236, as  
amended by 11  
April, 1876. P. L.,  
24, P. D., 1226.

Council may di-  
vide city into sew-  
erage districts.

Assessments upon  
property.

How made.

Assessors to be ap-  
pointed.

23 May, 1874.  
Assessors to re-  
port in writing.

thirty days after their appointment, make report in writing, specifying the amounts assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk, within such time as the council shall direct; after the report is filed, the council shall cause not less than ten day's notice to be given in two newspapers of the city of the object of such assessments, and that the same will come before the council for confirmation, at a time to be specified in such notice; objections to the assessments shall be in writing and filed with the city clerk, and objections may be heard before the city council at the time specified in the notice; the council may set aside such assessments, or they may, after hearing objections, confirm the same. If the council set the first or any other assessment aside, they may appoint other assessors of the same qualifications as hereinbefore provided, cause new assessments to be made, and the proceedings shall be the same as is provided for in the first assessment; but not more than two views or assessments shall be made in any one year.

Objections to as-  
essments.

Council may set  
aside assessment.

When a municipality undertakes the construction of a sewer, it is its duty to construct it properly, and to keep it in good condition and repair, otherwise it is liable in damages. *Vanderslice v. Phila.*, 103 Penn. St., 102.

Collection of as-  
essments.

188. After making any assessment for main or local sewerage according to valuation, or for local sewerage according to feet front, or after the confirmation of any assessment for main or local sewerage made according to benefits, the council may order such percentage of the assessment for main sewerage as may be necessary to pay the estimated costs and expenses of main sewerage, for such portion of any main sewer as the council shall have determined to construct or reconstruct, together with the total assessment for local sewerage, for such portion of any main sewer, or the assessments aforesaid by valuation or feet front, to be certified to the city solicitor, and collected as other taxes are collected; and such assessments shall be called sewerage tax, and claims for same shall be registered in (the) city lien docket as unpaid school and city taxes on real estate are by this act directed to be registered, and the same shall be from the time of such assessment, liens on such lots and lands in the hands or possession of the owner or owners thereof, their heirs and assigns, the same as other city taxes, and subject to the same penalties, if delinquent; and it shall be lawful for the city councils to cause said assessments to be collected before the work is contracted for.

Sewerage tax a  
lien.

*Ibid.*, § 48.  
P. D., 1287.

189. It shall be lawful for the city council of any such city to provide by ordinance for the construction, in any street or public highway within such city, of the proper house connections, branches leading in all main or branch-sewers, and also water-pipes and gas-pipes in such streets or highways, and to assess the cost and ex-

penses thereof upon the lots or parcels of land for the accommodation of which such connections, branches and pipes may be constructed: *Provided*, That in no case, except in a sanitary measure, of which councils shall judge, shall such city councils require said house-connection to be built further from such sewer than to the inner line of the curbstone of such street or highway.

22 May, 1874.

190. The councils of any city of the fourth, fifth, sixth or seventh class may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the cost and expense of constructing any main sewer, or reconstructing the same, and to report to councils what portions of said cost and expense is required for main sewerage, and what portion of the same is required for local sewerage, for any lot or lands to which any portion of such main sewer, to be designated by councils, shall serve as a local sewer; and it shall be lawful for the city councils to cause sewers of all kinds to be constructed or reconstructed without petition therefor from the property owners, and to provide either to pay for such sewerage out of the general revenue of the city, or for assessing the cost and expense thereof as follows, namely: In the case of main sewers, such proportion of the cost and expense of the same as is required for local sewerage shall be assessed upon the property abutting thereon, by an equal assessment by the foot front, or according to the assessed valuation of the same for purposes of city taxation, or in proportion to benefits upon lots or lands benefited by such local sewerage, as councils shall by ordinance in each case determine, and the cost of such main sewer, over and above the portion thereof assessed for local sewerage as above provided, shall be assessed upon the lots or lands within the sewer district where the work is to be done, according to the valuation of such lots or lands for city purposes, or according to benefits, as councils may by ordinance in each case determine. The cost of lateral sewers shall be assessed upon the lots or lands along or through which such lateral sewers run, according to the valuation of such lots or lands as aforesaid, or in proportion to benefits upon lots or lands benefited, or by an equal assessment by the foot front upon the lands along or through which such sewers run, as councils may by ordinance in each case determine.

24 May, 1867, Art.  
XVII, § 1.  
P. L., 204.

Sewerage districts.  
Estimates to be  
made by the city  
engineer.

Main and local  
sewerage.

Councils may order  
construction of  
sewers and provide  
for their payment.

Assessment upon  
property abutting  
thereon.

Lateral sewers.

Ibid, § 2.

How sewerage as-  
sessments are to be  
made.

191. If councils determine to make an assessment for main, local or lateral sewerage according to benefits, they shall appoint three disinterested citizens, who, or a majority of whom, shall assess the estimated expenses, as reported by the city engineer, of such main sewerage, on all the lots or lands in the sewer district wherein the sewer is to be constructed or reconstructed, in proportion to benefits, and the estimated expenses, as reported by said engineer, of such local or lateral

24 May, 1887.	sewerage on such lots or lands as will, in their opinion, be benefited thereby, whether fronting on the ground in which the sewer is to be constructed or reconstructed, or not, in proportion as nearly as may be to the benefits which may result to each lot or parcel of land.
Ibid, § 2. Report of assessors to be filed.	<b>192.</b> Said assessors, or a majority of them, shall, within thirty days after their appointment, make report in writing, specifying the amount assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk within such time as the councils shall direct. After the report is filed, the councils shall cause not less than ten days' public notice to be given, in two newspapers of the city, of the object of such assessments, and that the same will come before them for confirmation at a time to be specified in said notice. Objections to the assessment shall be in writing and be filed with the city clerk, and may be heard before the city councils, in joint convention, at the time specified in the notice. Councils may, after hearing objections, modify, set aside or confirm said assessments. If the councils set aside the first or any other assessments, they may appoint other assessors of the same qualifications as hereinbefore provided, and cause new assessments to be made, and the proceedings shall be the same as herein directed in case of the first assessment.
Notice of the filing of the report to be given.	
Objections to said report.	
Assessments may be modified, set aside, or confirmed.	
Re-assessment.	
Ibid, § 4. Collection of such assessments.	<b>193.</b> After making assessments for sewerage of any kind, councils may direct that they be certified to the city treasurer, or to such party as said assessments may be assigned to, for collection; and if such assessment be not paid within such time as councils may by ordinance prescribe, it shall be lawful to file liens therefor in the prothonotary's office of the proper county, as provided by this act, and said liens shall bear interest from the time the assessments were payable at the rate of six per centum per annum until paid.
In default of payment, lien therefor may be entered in the prothonotary's office.	
Interest on liens.	
Ibid, § 5. Branch sewers and house connections.	<b>194.</b> The city councils may provide, by ordinance, for the construction in any street or public highway within such city of all proper house connections and branches leading into main or lateral sewers, or connecting with gas, water, steam or other pipes in said streets or highways which they may deem necessary; <i>Provided</i> , That in no case, except as a sanitary measure, of which councils shall judge, shall they require such house connections to be extended further from such sewers or from such gas, water, steam or other pipes than to the inner line of the curbstone of such street or highway. Councils may provide for the assessment of the cost and expense of such connections upon the lots or parcels of land for the accommodation of which such connecting branches and pipes may be constructed, or may collect the same from the owner or owners of such lot or lots, or parcels of land, by action of debt, or from the persons or corporations owning or operating such gas, water, steam or other pipes. Councils may also
Extent of such connections.	
Assessment of the costs and expenses of such connections.	

notify such owners to make such connections within such time as they may direct, and in default of compliance with such notice cause the said connections to be made, and collect the cost thereof from the parties owning or operating such gas, water, steam or other pipes, with interest.

24 May, 1887.

When councils may cause connections to be made.

### Swampy Lands.

195. Any swampy or wet lands belonging to several owners disjunctly may be drained at the common expense under the following regulations :

5 April, 1870, § 1.  
P. L., 47.  
P. D., 81.

196. Upon the petition of the majority of said owners of such wet or swampy lands forming a continuous swamp or marsh the court of quarter sessions of the county, or if lying in two counties the nearest court shall appoint three disinterested persons, who shall be commissioners with power to view the wet lands described ; and if in their judgment to drain them shall be practicable, they shall proceed to lay out and drain, measuring the length and ascertaining the depth, as near as may be with ordinary facilities ; they shall also have power, and it shall be their duty, to make a survey of such swampy or wet land to get its contents and quantity owned by each landholder, and make an estimate of the cost of constructing said drain.

Ibid, § 2.

Upon petition of majority of owners three commissioners to be appointed.

197. If, in the judgment of the commissioners, the swamp is a public nuisance, then they shall have power to say what portion of the expense shall be borne by the township or townships in which said swamp lies.

Ibid, § 5.

In case swamp be a nuisance.

## X. ADULTERATION OF FOOD.

### Pleuro-Pneumonia ; Milk, Butter, Cheese, Oleo-margarine ; Liquors.

198. Cities of the third, fourth and fifth classes coming under the provisions of this act in their corporate capacities are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act : \* \* \* To purchase and own grounds for and to erect and establish market houses and market places, and to regulate and govern the same. \* \* \*

23 May, 1874, § 20.  
P. L., 227.  
P. D., 1218.  
As amended by act 11 April, 1876,  
P. L., 81-2.

Power of cities of third, fourth and fifth classes to regulate markets.

199. Every borough within the Commonwealth that may hereafter be incorporated by an act of the General Assembly, or by the court of quarter sessions of any county, shall have power—

8 April, 1861, § 1.  
P. L., 320.  
P. D., 202.  
§ 42-58.

Power of boroughs over markets.  
§ 2, XI.

To make all needful regulations respecting markets and market days, the hawking and peddling of market produce and other articles in the borough. \* \* \*



3 April, 1851.

By the common law of Pennsylvania every municipal corporation that has power to make by-laws and establish ordinances to promote the general welfare and preserve the peace of the town or city may fix the times or places of holding public markets for the sale of food and make such other regulations concerning them as may conduce to the public interest. And the right to establish a market includes the right to shift it from place to place when the convenience or necessities of the public demand it.—*Wartman v. Phila.*, 33 Penn. St., 302. See *Danville v. Peters*, 8 Luz. Leg. Reg., 273.

18 March, 1775, § 7.  
1 Sm., 425.  
B. P. D., 325.

Adulteration of  
flour.

**200.** If any person or persons shall adulterate or mix any improper and unwholesome ingredient in any kind of flour of which bread shall be made as aforesaid, every such person or persons, being thereof legally convicted before any magistrate or justice of the city, borough or county where such bread shall be so made, sold, or exposed to sale, who is hereby authorized and empowered to hear, try and determine the same, shall forfeit and pay the sum of five pounds for every such offense.

6 April, 1802, § 1.  
3 Sm., 530.  
P. D., 1146.

Provisions not to be  
resold in the same  
market.

**201.** It shall and may be lawful for any person or persons to sell or expose to sale provisions, vegetables or fruit in the markets of any city, borough or corporate town within this Commonwealth: *Provided always*, That such provisions, vegetables or fruit shall not have been previously purchased within the limits of such city, borough or corporate town.

7 May, 1855, § 1.  
P. L., 463.  
P. D., 1146.

Penalty for expos-  
ing for sale un-  
wholesome meat or  
fish.

**202.** It shall not be lawful for any butcher or other person to expose for sale any tainted or unwholesome meat or fish, or any veal less than three weeks old when killed, in any of the market houses or other places for vending meat in any of the cities or boroughs in the several counties of this Commonwealth under a penalty of ten dollars for each offense, to be recovered as other penalties are recoverable before any alderman or justice of the peace; one-half of said penalty to go to the informer and the other half for the benefit of the poor.

31 March, 1890, § 69.  
P. L., 401.  
P. D., 422.

Selling unwhole-  
some food, drink  
or adulterated  
medicines.

**203.** If any person shall sell or expose for sale the flesh of any diseased animals, or any other unwholesome flesh, knowing the same to be diseased or unwholesome, or sell or expose for sale unwholesome bread, drink or liquor, knowing the same to be unwholesome; or shall adulterate for the purpose of sale, or sell any flour, meal or other article of food, any wine, beer, spirits of any kind, or other liquor intended for drinking, knowing the same to be adulterated; or shall adulterate for sale, or shall sell, knowing the same to be so adulterated, any drugs or medicines, such person so offending shall be guilty of a misdemeanor, and upon conviction be sentenced to pay a fine not exceeding one hundred dollars or undergo an imprisonment not exceeding six months, or both or either, at the discretion of the court.\*

\*This section is the amendment and extension of the act of 18 March, 1775, 1 Sm., 425; of the fifth section of the act of 8 May, 1854, P. L., 604; and of the eleventh section of the act of 20 April, 1853, P. L., 367, which provide against the sale of unwholesome bread and liquors.

204. If any person shall manufacture for sale, or sell or offer to sell any candy or confectionery, adulterated by the mixture of terra alba, barytes, talc, or other mineral substance, or by poisonous colors, or flavors, or other ingredients, deleterious or detrimental to health, knowing the same to be so adulterated, such person so offending shall be guilty of a misdemeanor, and upon conviction be sentenced to pay a fine not exceeding one hundred dollars nor less than fifty dollars, and the candy or confectionery, so adulterated, shall be forfeited and destroyed by the order of the court.

23 May, 1887, § 1.  
P. L., 157.

Adulteration of candy or confectionery declared a misdemeanor.

Penalty.

Candy, &c., so adulterated, to be destroyed.

205. If any candy or confectionery, adulterated in violation of the first section of this act, shall be found in the possession of any manufacturer, merchant, or dealer, it shall be deemed *prima facie* evidence that the same is offered for sale and that the person having it in possession knew that the same was so adulterated.

*Ibid*, § 2.

Possession to be *prima facie* evidence of offer to sell.

206. No action shall be maintained, or recovery had in any case, for the value of any candy or confectionery which may have been adulterated as specified in the first section of this act, and it shall be competent for the defendant in every such case to prove that the candy or confectionery was so adulterated, and proof thereof being so made shall amount to a good and legal defense to the whole of the plaintiff's claim therefor.

*Ibid*, § 3.

Action for value of, not maintainable.

Defendant may prove adulteration.

And when proved, a legal defense to whole of plaintiff's claim.

207. It shall be unlawful for any person or persons, during the months of June, July and August, in each year, to bring into this Commonwealth, for sale, or to vend or sell, or to expose for sale any oysters; and any person or persons so offending, shall be guilty of a misdemeanor, and upon conviction, shall be sentenced to pay a fine not exceeding one hundred dollars, or undergo an imprisonment not exceeding six months, or both, at the discretion of the court.

10 April, 1873, § 1.  
P. L., 69.  
P. D., 427.

Oysters not to be sold in certain months.

### Pleuro-pneumonia.

208. It shall not be lawful for any person who may own any cattle or sheep, affected by the disease known as the pleuro-pneumonia, or other contagious or infectious disease, to sell or otherwise dispose of any cattle, either alive or slaughtered, from the premises where such disease is known to exist, nor for a period of two months after such disease shall have disappeared from said premises.

12 April, 1886, § 1.  
P. L., 101.  
P. D., 244.

Pleuro-pneumonia. Diseased cattle not to be disposed of.

209. No cattle or sheep shall be allowed to run at large in any township or borough where any contagious disease prevails; and the constables of such townships are hereby authorized and required to take up and confine any cattle so found running at large, until called for, and until all costs are paid; and in townships where there are no constables, it shall be the duty of the township clerk to perform this service; and the said officers shall be entitled to receive one dollar for each head of cattle so taken up; and any officer who shall

*Ibid*, § 2.

Taking up of diseased cattle.

12 April, 1898.

Ibid, § 2.

1 May, 1879 § 1.  
P. L., 38.  
P. D., 244.

Prevention of  
spread of pleuro-  
pneumonia.

Ibid, § 2.

Powers of the Gov-  
ernor.

Diseased animals  
to be secluded.

Certain farms to be  
quarantined.

Destruction of dis-  
eased animals.

Disinfection of  
buildings, &c.

refuse to perform the duties of this act shall be liable to a fine of ten dollars.

210. Any person offending against the provisions of the first section of this act shall be guilty of a misdemeanor, and upon conviction, be sentenced to pay a fine not exceeding five hundred dollars, or undergo an imprisonment not exceeding six months.

211. Whenever it shall be brought to the notice of the Governor of this State, that the disease known as contagious or infectious pleuro-pneumonia exists among the cattle in any of the counties in this State, it shall be his duty to take measures to promptly suppress the disease and prevent it from spreading.

212. For such purpose, the Governor shall have power, and he is hereby authorized, to issue his proclamation, stating that the said infections or contagious disease exists in any county or counties of the State, and warning all persons to seclude all animals in their possession that are affected with such disease, or have been exposed to the infection or contagion thereof, and ordering all persons to take such precautions against the spreading of such disease as the nature thereof may, in his judgment, render necessary or expedient; to order that any premises, farm or farms, where such disease exists, or has existed, be put in quarantine, so that no domestic animal be removed from said places so quarantined; and to prescribe such regulations as he may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs to carry out and enforce the provisions of such proclamations, orders and regulations; and it shall be the duty of all the sheriffs and deputy-sheriffs to obey and observe all orders and instructions which they may receive from the Governor in the premises; to employ such and so many medical and veterinary practitioners, and such other persons as he may from time to time deem necessary, to assist him in performing his duty as set forth in the first section of this act, and to fix their compensation; to order all or any animals coming into the State to be detained at any place or places for the purpose of inspection and examination; to prescribe regulations for the destruction of animals affected with the said infectious or contagious disease, and for the proper disposition of their hides and carcasses; and of all objects which might convey infection or contagion (provided that no animal shall be destroyed, unless first examined by a medical or veterinary practitioner in the employ of the Governor as aforesaid); to prescribe regulations for the disinfection of all premises, buildings and railway cars, and of objects from or by which infection or contagion may take place or be conveyed; to alter and modify, from time to time, as he may deem expedient, the terms of

all such proclamations, orders and regulations, and to cancel or withdraw the same at any time.

213. All the necessary expenses incurred under direction or by authority of the Governor in carrying out the provisions of this act, shall be paid by the Treasurer, upon the warrant of the Auditor General, on being certified as correct by the Governor: *Provided*, That animals coming from a neighboring State that have passed a veterinary examination in said State and have been quarantined and discharged, shall not be subject to the provisions of this act.

1 May, 1879.

*Ibid*, § 3.

Payment of expenses.

Animals previously examined, not subject to the act.

### Milk, Butter, Cheese, Oleomargarine.

214. The councils of cities and boroughs in this Commonwealth be and they are hereby authorized and empowered to provide for the inspection of milk, under such rules and regulations as will protect the people from adulteration and dilution of the same.

20 April, 1890, § 1.  
P. L., 81.  
P. D., 1173.

Inspection of milk.

215. Whoever shall knowingly sell, supply or bring to be manufactured, to any cheese manufactory in this State, any milk diluted with water, or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as skim milk, or whoever shall keep back any part of the milk known as strip-pings, or whoever shall knowingly bring or supply milk to any cheese manufactory that is tainted, or partly sour, from want of proper care in keeping pails, strainers or any vessels in which said milk is kept, clean and sweet, after being notified of such taint or carelessness, or any cheese manufacturers who shall knowingly use, or direct any of his employes to use for his or their individual benefit, any cream from the milk brought to said cheese manufacturer, without the consent of all the owners thereof, shall, for each and every offense, forfeit and pay a sum not less than twenty-five dollars nor more than one hundred dollars, with costs of suit, to be sued for in any court of competent jurisdiction, for the benefit of the person or persons, firm or association or corporation, or their assignees, upon whom such fraud shall be committed: *Provided*, That the provisions of this act shall extend only to Erie, Crawford and McKean counties.

14 April, 1870, § 1.  
P. L., 1176.  
P. D., 1173 n.

Sale of impure milk to cheese manufactories.

Varieties of impure milk.

Penalty.

216. Any person or persons, who shall knowingly sell or exchange, any impure, adulterated or unwholesome milk, shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine of not less than twenty dollars for each and every offense; and if the fine be not paid, shall be imprisoned for not less than fifteen days, or until said fine shall be paid.

25 May, 1873, § 1.  
P. L., 144.  
P. D., 1173.

Penalty for sale of adulterated milk.

217. Any person who shall adulterate milk, with the view of offering the same for sale or exchange, shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine of not less than ten dollars for each and every offense; and if the fine be not paid,

*Ibid*, § 2.

Penalty for the adulteration of milk.

26 May, 1878.

Ibid, § 3.

Milk-wagons to be marked.

shall be imprisoned for not less than eight days, or until said fine is paid.

**218.** Any person or persons who shall, in any cities, boroughs and villages, having a population of one thousand inhabitants and upwards, engage in or carry on the sale, exchange or traffic in milk, shall have the carriage or vehicle from which the same is vended conspicuously marked with his, her or their names, also indicating the locality from whence said milk is obtained or where produced; and for every neglect of such marking, the person or persons so neglecting shall be subject to the penalties provided for in section second of this act.

Ibid, § 4.

Penalty for deceptive marking.

**219.** For marking wagons or vehicles so as to convey the idea that said milk is procured from, or produced in a different locality than it really is, the person or persons so offending shall be subject to a fine of fifty dollars, or imprisonment not less than thirty days, or both, at the discretion of the court

Ibid, § 5.

What to be deemed an adulteration.

**220.** The addition of water or of ice to the milk, is hereby declared an adulteration; any milk obtained from animals fed on distillery waste or any substance in a state of putrefaction, is hereby declared to be impure and unwholesome.

10 June, 1881, § 1.  
F. L., 116.  
F. D., 231.

Penalty for furnishing impure milk to butter or cheese factories.

**221.** If any person or persons shall, with intent to defraud, sell, supply or bring to be manufactured, at any butter or cheese manufactory in this State, any milk diluted with water, or in any way adulterated, uncleanly or impure, or milk from which cream has been taken, or milk commonly known as skimmed milk, or if any person or persons so furnishing milk as aforesaid, who shall keep back any part of the milk known as "strippings," or who shall knowingly bring or supply milk to any butter or cheese manufactory that is tainted or partially sour, or shall knowingly bring or supply to any butter or cheese manufactory milk drawn from cows within fifteen days before parturition, or within five days after parturition, shall for each offense forfeit and pay a sum not less than ten dollars nor more than one hundred dollars, with costs of suit, to be sued for in any court of competent jurisdiction for the benefit of the person or persons, firm or association or corporation upon whom such fraud or neglect shall be committed.

7 July, 1885, § 1.  
F. L., 280  
F. D., 2239.

Sale, &c., of adulterated milk prohibited in cities of the second and third classes.

Penalty.

**222.** In cities of the second and third classes who ever by himself or by his servant or agent, or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession with intent to sell or exchange, or exposes or offers for sale or exchange, adulterated milk, or milk to which water or any foreign substance has been added, or milk produced from cows fed upon any substance in a state of putrefaction, or from sick or diseased cows, shall, for such offense, be punished by a fine of not less than twenty, nor more than one hundred dollars.

**223.** Whoever, by himself or by his servant or agent or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession, with intent to sell or exchange, or exposes or offers for sale as pure milk, any milk from which the cream or any part thereof has been removed shall, for such offense, be punished by the penalty provided in the preceding section.

7 July, 1888, § 2.

Sale, &c., of milk, from which cream has been taken, as pure milk, prohibited.

Penalty.

**224.** No dealer in milk and no servant or agent of such a dealer, shall sell, exchange or deliver, or have in his custody or possession, with intent to sell, exchange or deliver, milk from which the cream or any part thereof has been removed, unless in a conspicuous place above the centre upon the outside of every vessel, can or package, from or in which such milk is sold the words "skimmed milk" are distinctly painted in letters not less than one inch in length.

Ibid, § 2.

Milk from which the cream has been taken, to be sold from vessels marked "skimmed milk."

Whoever violates the provisions of this section shall, for such offense, be punished by the penalty provided in section one of this act.

Penalty for violation of this section.

**225.** If the milk mentioned in sections one and two of this act is shown, upon analysis, to contain more than eighty-seven and fifty-one-hundredth per centum of watery fluid, and to contain less than twelve and fifty-one-hundredth per centum of milk solids, and less fat than three per centum, and if the specific gravity at sixty degrees Fahrenheit is not between one and twenty-nine one-thousandths to one and thirty-three one thousandths, it shall be deemed to be adulterated.

Ibid, § 4.

What kind of milk shall be deemed to be adulterated.

**226.** If the skimmed milk mentioned in section three of this act, is shown, upon analysis, to contain less than six per centum of cream by volume, and less than two and five-tenths per centum of fat by weight, and if the specific gravity at sixty degrees Fahrenheit, is not between one and thirty-two-thousandths, to one and thirty-seven-thousandths, it shall be deemed to be adulterated.

Ibid, § 5.

When "skimmed milk" shall be deemed to be adulterated.

**227.** Whenever the inspector of milk has reason to believe that any milk found by him is adulterated, he shall take specimens thereof and test the same with such instrument or instruments as are used for such purpose, and if the result of such test indicates that the milk has been adulterated or deprived of its cream, or any part thereof, the same shall be *prima facie* evidence of such adulteration in prosecution under this act. If the said inspector shall deem it necessary he shall cause such milk to be analyzed, the result of which analysis he shall record and keep as evidence, and a certificate of such result sworn to by the analyzer shall be admissible in evidence in prosecutions under this act. The expenses of such analysis, not exceeding fifteen dollars in any one case, may be included in the costs of such prosecutions.

Inspector may take specimens for examination.

When same may be *prima facie* evidence.

Inspector may cause milk to be analyzed.

Sworn certificate may be evidence.

Expense of analysis.

**228.** It shall be the duty of the inspector of milk to commence proceedings in the name of the board of

Inspector to commence proceedings for violations of act.

7 July, 1888.

health for any violations of the provisions of this act, from his own knowledge, or on information of any person giving satisfactory evidence to him of such violations before any mayor, deputy mayor, or alderman of said cities.

To whom fines, &c.,  
are to be paid.

The recovery of fines or penalties imposed and inflicted on any person by the provisions of this act, shall be for the use of said board of health, and upon non-payment of the fines or penalties imposed and inflicted as aforesaid, such person shall be committed to the county jail for a period not exceeding thirty days.

Imprisonment.

Violation of act de-  
clared a misde-  
meanor.

**229.** That in addition to the fines mentioned in the foregoing sections of this act, any person or persons violating the same, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be liable to a fine of not less fifty, nor more than one hundred dollars, or by imprisonment in the county jail for not less than ten, nor more than thirty days, or both or either at the discretion of the court.

Penalty.

21 May, 1888, § 1.  
P. L., 22.  
P. D., 2358.

Manufacture of  
imitation butter or  
cheese prohibited.

**230.** No person, firm, or corporate body shall manufacture out of any oleaginous substance or any compound of the same, other than that produced from unadulterated milk or of cream from the same, any article designed to take the place of butter or cheese produced from pure unadulterated milk or cream from the same, or of any imitation or adulterated butter or cheese, nor shall sell or offer for sale, or have in his, her or their possession with intent to sell the same as an article of food.

Ibid, § 2.

No action lies for  
price of such arti-  
cle.

**231.** Every sale of such article or substance, which is prohibited by the first section of this act, made after this act shall take effect, is hereby declared to be unlawful and void, and no action shall be maintained in any of the courts of this State to recover upon any contract for the sale of any such article or substance.

Ibid, § 3.

Penalty.

**232.** Every person, company, firm or corporate body who shall manufacture, sell or offer or expose for sale, or have in his, her or their possession with intent to sell, any substance, the manufacture and sale of which is prohibited by the first section of this act, shall, for every such offense, forfeit and pay the sum of one hundred dollars, which shall be recoverable with costs by any person suing in the name of the Commonwealth as debts of like amount are by law recoverable; one-half of which sum, when so recovered, shall be paid to the proper county treasurer for the use of the county in which suit is brought, and the other half to the person or persons at whose instance such a suit shall or may be commenced and prosecuted to recovery.

Ibid, § 4.

Penalty for first  
offense.

**233.** Every person, who violates the provisions of the first section of this act, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than one hundred dollars, nor more than three hundred, or by imprisonment in the county jail for not less than ten nor more than thirty days, or

Penalty for subse-  
quent offence.

both, such fine and imprisonment for the first offence, and imprisonment for one year for every subsequent offence.

**234.** It shall be the duty of constables of the several cities, boroughs, wards and townships of this Commonwealth, to make quarterly reports under oath to the courts of quarter sessions of all violations of any of the provisions of this act which may come or be brought to their notice, and it shall be the duty of the judges of of the said courts to see that the said returns are made regularly and faithfully.

**235.** This act shall take effect on the first day of July, A. D. 1885.

All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

This act was declared constitutional by the Supreme Court, January 3, 1887. The act regulating the manufacture and sale of oleomargarine; hereby repealed, was that of 24 May, 1883. P. L., 43, P. D., 230.

The act of May 21, 1885, P. L., 22, prohibiting the manufacture and sale of oleomargarine, or the keeping the same with intent to sell, falls within the police power of the State, which may be prescribed to be the power vested in the Legislature by the Constitution to make, ordain and establish all manner of wholesome and reasonable laws, statutes and ordinances, either with penalties or without, not repugnant to the Constitution, as they shall judge to be for the good and welfare of the Commonwealth, and the people of the same.

The test of the reasonableness of a police regulation prohibiting the making and vending of a particular article of food, is not alone whether it is in part unwholesome and injurious. If an article of food is of such a character that few persons will eat it knowing its real character, if at the same time it is of such a nature that it can be imposed upon the public as an article of food which is in common use, and against which there is no prejudice; and if in addition to this, there is probable ground for believing that the only way to prevent the public from being defrauded into purchasing the counterfeit article from the genuine is to prohibit altogether the manufacture and sale of the former, then such a prohibition may stand as a reasonable police regulation, although the article prohibited is in fact innocuous, and although its production might be found beneficial to the public, if in buying it they could distinguish it from the production of which it is the imitation. The fact that scientific experts may pronounce a manufactured article intended for human food to be wholesome and in a pure state good for food, does not render it incompetent for the Legislature to prohibit the manufacture and sale of the article, if in the judgment of the Legislature, and not of the courts, it be necessary to the protection of the lives, health and property of the citizens, and to the preservation of good order and the public morals. The act of 21st May, 1885, is not in conflict with amendment XIV, of the Constitution of the United States. *Powell v. Commonwealth*, 114 Pa. St., 265. See dissenting opinion of Justice Gordon, in same case.

**236.** Every person who shall wilfully and maliciously kill, maim or disfigure any horses, cattle or other domestic animals of another person, or shall wilfully and maliciously administer poison to any such beasts, or expose any poisonous substance with the intent that the same should be taken or swallowed by them shall be guilty of a misdemeanor, and being thereof convicted shall be sentenced to pay a fine not exceeding five hundred dollars and to undergo an imprisonment by separate or solitary confinement at labor not exceeding three years.

21 May, 1885.

*Ibid.* § 5.

Constables to make quarterly reports to quarter sessions of violations.

*Ibid.* § 6.

*Ibid.* § 7.

21 March, 1890, § 154.  
P. D., 450.

Maliciously killing, maiming or poisoning cattle.



23 May, 1878, § 1.  
P. L., 117.  
P. D., 1233.  
Exposure of poi-  
sons for birds.

Penalty.

No person shall put or expose in any public place or high-  
nor on his own lands outside of his buildings, nor on the land  
any other person, any poison, or admixture thereof, with the  
tent that the same shall be taken or swallowed by any bird, f  
or wild animal.\*

Any person violating this act shall, on conviction before a  
alderman or justice of the peace, be subjected to a fine of two  
dollars to the use of the Commonwealth.

### Adulteration of Liquors.

14 April, 1863, § 1.  
P. L., 389.  
P. D., 422.

Drugs not to be  
used in manufac-  
ture of liquors.

237. It shall be unlawful for any person or persons  
to make use of any active poison or other deleterious  
drugs in any quantity or quantities in the manufacture  
or preparation by process of rectifying or otherwise  
any intoxicating malt or alcoholic liquors, or for a  
person or persons to knowingly sell such poisoned  
drugged liquors in any quantity or quantities; and a  
person or persons so offending shall be deemed guilty  
of a misdemeanor.

Ibid, § 2.

Manufacturers to  
brand their names,  
&c., on barrels.

238. It shall be the duty of any person or persons  
engaged in the manufacture and sale of intoxicating  
malt or alcoholic liquors, or in rectifying or prepar-  
the same in any way, to brand on each barrel, cask  
other vessel containing the same, the name or names  
the person or persons manufacturing, rectifying or pre-  
paring the same, and also these words, "containing  
deleterious drugs or added poison;" and shall also cer-  
tify the same fact or facts to the purchaser over his, or  
or their own proper signature.

Ibid, § 3.

Possession of drug-  
ged liquor evi-  
dence of violation.

239. If any barrel, cask or other vessel contain-  
any such drugged or poisoned liquor shall be found  
the possession of any person or persons designated  
sections one and two it shall be deemed *prima facie*  
evidence of a violation of the provisions of this act.

Ibid, § 4.

Court may direct  
analysis.

240. Any suspected article or specimen of intoxicat-  
ing malt or alcoholic liquor shall be subject to analysis  
by some competent person to perform the same under  
the direction of the court before which the case is tried  
and such analysis duly certified under oath shall be  
deemed legal evidence in any court in this State: *Provided*,  
That upon any preliminary examination before  
any justice of the peace, mayor or other magistrate  
competent authority; for the purpose of binding over  
such officer may order the inspection aforesaid to be  
made and make such order as may be necessary to pre-  
serve the evidence of the offence until the trial of the  
offender.

Ibid, § 5.

Penalty, fine or  
imprisonment.

241. Any person offending against any of the provisions  
of this act shall be deemed guilty of a misdemeanor,  
and on conviction thereof, shall be sentenced to pay a  
fine, not exceeding five hundred dollars, and to undergo  
an imprisonment, not exceeding twelve months, or both,  
or either, in the discretion of the court.

\*This does not appear to embrace dogs and cats, which  
neither "birds, fowls nor wild animals." Being a highly pe-  
law, it must be taken strictly.—P. D., 1333, n.

**242.** In all actions for the sale of any spirituous, vinous or malt liquors, or any admixtures thereof, it shall be competent for the defendant, in every such case, to prove that said liquors or admixtures thereof were impure, vitiated, or adulterated; and proof thereof being made, shall amount to a good and legal defence to the whole of the plaintiff's demand.\*

**243.** [Special provision for Allegheny county practically identical with the above.]

**244.** Any and all persons engaged in the business of brewing or manufacture of ale, beer or other malt liquors, or in the fermentation, distillation or manufacture, of any vinous or spirituous liquors, be and they are hereby prohibited making use, in or about such business, or in any such process of brewing, fermentation, distillation, or manufacture, of any poisonous or deleterious drugs or chemicals, or any impure or injurious materials, or such as are prejudicial to the public health, or the health of any person drinking or making use of any such malt, vinous or spirituous liquors.

**245.** [The violation of the first section of this act is declared to be a misdemeanor, punishable by a fine of one thousand dollars and by an imprisonment of not more than one year.]

29 March, 1860, § 1.  
P. L., 346.  
P. D., 1085.

Impurity of  
liquors sold, good  
defence to action  
for price.

3 April, 1872, § 13.  
P. L., 843.  
P. D., 1090.

2 June, 1881, § 1.  
P. L., 43.  
P. D., 422.

Use of injurious  
drugs in manufac-  
ture of liquors pro-  
hibited.

Ibid, § 2.

Penalty.

## XI. APOTHECARIES.

### Medicines, Poisons.

**246.** No person whosoever shall open or carry on as manager, in the State of Pennsylvania,† any retail drug or chemical store, nor engage in the business of compounding or dispensing medicines, or prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons or medicines, without having obtained a certificate of competency and qualification to do so from the State Pharmaceutical Examining Board, and having been duly registered as herein provided.

**247.** There shall be established in the State of Pennsylvania a board to be styled the "State Pharmaceutical Examining Board," to consist of five persons, three of whom shall constitute a quorum, who shall be appointed by the Governor from among the most skillful retail apothecaries, actually engaged in said business in the State of Pennsylvania, and who must have had ten

24 May, 1887, § 1.  
P. L., 189.  
P. D., 2132.

Druggists, &c.,  
not to engage in  
business without  
certificate of com-  
petency from State  
Pharmaceutical  
Examining Board.

To be registered.

Ibid, § 2.

State Pharmaceuti-  
cal Examining  
Board established.  
Governor to ap-  
point the five mem-  
bers.

Qualifications.

\*The act of March 29, 1860, P. L. 346, was not intended to prevent every admixture of liquors, and the penalty of the act is aimed at such impurity, vitiation, or adulteration of liquors or admixtures thereof as impair either their quality or value. The act forbids the introduction of all poisonous or noxious ingredients. *Clohessey v. Roedelheim*, 1 Pennyp., 266.

†The act 4 April, 1872, § 1, P. L. 905, P. D. 96, applied only to Philadelphia, and is superseded by this act.

24 May, 1887. Terms of members first appointed.	years' practical experience in the same, one to serve five years, one, four years, one, three years, one, two years and one, one year, in the first instance, and thereafter annually the Governor shall appoint one person to serve as a member of said board for the term of five years. The said persons so appointed shall be and constitute the said the State Pharmaceutical Examining Board, and shall hold the office for the term for which they were appointed, or until their successors are duly appointed and qualified, and shall receive as a compensation for their services five dollars for each day actually engaged in this service and all legitimate and necessary expenses incurred in attending the meetings of said board under the provisions of this act, and no part of the salary of said board or expenses thereof shall be paid out of the State treasury.
Regular term.	
Compensation.	
State to be at no expense whatever.	
Organization of the board.	The said board shall organize by electing one of its members secretary, who, in addition to his compensation as member of said board, shall receive a further sum not to exceed one hundred dollars annually for his services as secretary.
Secretary to be elected.	
Compensation of secretary.	
Members of the board to be sworn.	They the said board and each of them shall, within ten days after their appointment or being apprised of the same, take and subscribe an oath or affirmation, before a properly qualified officer of the county in which they reside, that they will faithfully and impartially perform the duties of their office.
Vacancies to be filled by the Governor.	Any vacancies occurring in said board shall be filled by the Governor of the State of Pennsylvania from among such only as are eligible for original appointment.
Ibid, § 3. Book of registration to be kept open. Notice of place to be advertised in four newspapers. Contents of registration book.	<b>248.</b> The said Pharmaceutical Examining Board shall keep a book of registration open at some convenient place, of which due notice shall be given by advertisement in at least four newspapers of the State and so divided as to reach as nearly as practicable all parts thereof, in which book shall be registered the name and address of each and every person duly qualified under this act to conduct and carry on the retail drug and apothecary business, or to hold the position of qualified assistant therein. And it shall be the duty of all persons now conducting or who shall hereafter conduct the business of retail apothecaries, or those acting in the capacity of qualified assistants therein, in said State, to apply to said board and be registered as such within ninety days after such notice, and thereafter every three years; application for registration only may be sent by mail to the secretary of the examining board, after being properly attested before a notary public or any other person authorized to administer an oath or affirmation in the county in which the applicant resides.
Duty of the person engaged in the business to register.	
Application for registration may be sent by mail.	The form of application shall be subject to such regulations as the board may see proper to adopt, but in no case shall the applicant be put to any unnecessary expenses in order to secure registration.
Board to adopt form for registration.	

**249.** The said board shall be entitled to demand and receive from each applicant for examination and registration and for the certificate hereinafter provided, a fee not to exceed two dollars, and for registration only, a fee not to exceed one dollar in the first instance, and for renewing the same every three years, a fee not to exceed one dollar; and the amount derived from this source shall be held by said board and be applied to the expenses and salaries herein provided, and such as may rise under the provisions of this act; and they, the said board, shall report annually to the Governor of the State of Pennsylvania all moneys received and disbursed under the provisions of this act, together with the number of pharmacists registered under this act.

**250.** It shall be the duty of said board to meet once every three months in the city of Harrisburg, or at such other place as they may deem expedient, and examine all persons who shall desire to carry on the business of a retail apothecary, or that of retailing drugs, chemicals or poisons, or of compounding physicians' prescriptions, touching their competency and qualifications; and they, the said board, or a majority of them, shall grant to such persons as may be qualified, certificates of competency or qualification, which shall entitle the holders thereof either to conduct or carry on the business, or to act as a qualified assistant therein, as may be expressed upon the said certificate, and such certificate, together with its renewals, shall be good and sufficient evidence of registration under this act.

All persons applying for examination for certificate to entitle them to conduct and carry on the retail drug or apothecary business, must produce satisfactory evidence of having had not less than four years' practical experience in the business; and those applying for examination for certificates as qualified assistants therein, must produce evidence of having not less than two years' experience in said business.

**251.** No person shall hereafter engage as manager in the business of an apothecary, or pharmacist, or of retailing drugs, chemicals and poisons, or of compounding and dispensing the prescriptions of physicians, either directly or indirectly, without having obtained such certificate as aforesaid. But nothing contained in this act shall, in any manner whatever, interfere with the business of any practitioner of medicine, nor prevent him from administering or supplying to his patients such articles as to him may seem fit and proper, nor shall it interfere with the making and dealing in proprietary remedies, popularly called patent medicines, nor prevent store-keepers from dealing in and selling the commonly used medicines and poisons, if such medicines and poisons conform, in all respects, to the requirements of section nine: *Provided*, The provisions of section ten of this act be fully complied with:

24 May, 1887, § 4.

Fees to be charged and received by the board.

Application of the fees so received.

Board to make an annual report to the Governor.

Contents of report.

*Ibid*, § 5.

Meetings of the board.

Examination.

Certificates of competency to be given to qualified persons.

Contents of certificate.

Certificate to be evidence of registration.

Druggists to have four years' experience to secure certificate.

Assistants two years' experience.

*Ibid*, § 6.

All druggists must have certificate.

This act not to apply to practitioners of medicine.

Nor interfere with "patent medicines."

Nor prevent sale of commonly used medicines.

24 May, 1887.

Violation of this section a misdemeanor.

Penalty.

*Ibid*, § 7.

Act not to apply to persons now engaged in business, except as to registration.

Term "qualified assistant" defined.

When other assistants entitled to registration without examination.

*Ibid*, § 8.

What persons only permitted to compound or dispense prescriptions.

Violation of this provision declared a misdemeanor.

Penalty.

*Ibid*, § 9.

Wilful falsification or adulteration of drugs prohibited.

Sale of adulterated or weakened drugs prohibited.

Violation of provisions of this section declared a misdemeanor.

Penalty.

*Ibid*, § 10.

The word "poison" defined.

Bottle, box, &c., containing poison to be labelled.

Any person who shall violate or fail to comply with the provisions of this section shall be guilty of a misdemeanor, and on conviction, before any court, shall be punished by a fine not exceeding one hundred dollars, or be imprisoned in the county jail of the proper county for a term not exceeding one year, or either, or both, at the discretion of the court.

**252.** The foregoing provisions of this act shall not apply to or effect (affect?) any person who shall be engaged in the retail drug and apothecary business as proprietor of the same, or as qualified assistant therein, at the passage of this act, except only in so far as relates to registration and fees provided in sections three and four of this act. A qualified assistant engaged in the business, at the passage of this act, is one who has had not less than two years' practical experience in the retail drug and apothecary business. All other assistants actually engaged in the business at the passage of this act shall, upon the completion of a like term of two years' experience, be entitled to registration as qualified assistants without examination.

**253.** No person shall be allowed, by the proprietor or manager of any store or place where prescriptions are compounded, to compound or dispense the prescriptions of physicians, except under the immediate supervision of said proprietor or his qualified assistant, unless holding a properly certified certificate of registration or competency from the State Pharmaceutical Examining Board, as herein provided, and any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one hundred dollars.

**254.** No person shall knowingly, wilfully or fraudulently falsify or adulterate, or cause to be falsified or adulterated, any drug or medical substance, or any preparation authorized or recognized by the pharmacopœia of the United States, or used or intended to be used in medicinal practice, nor mix or cause to be mixed with any such drug or medicinal substance any foreign or inert substance whatsoever for the purpose of destroying or weakening its medicinal power and effect, and wilfully, knowingly or fraudulently sell or cause the same to be sold for medicinal purposes.

Any person who shall violate this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding five hundred dollars, and shall forfeit to the Commonwealth all articles so adulterated.

**255. Poisons.** A poison in the meaning of this act shall be any drug, chemical or preparation, which, according to standard works on medicine or materia medica, is liable to be destructive to adult human life, in quantities of sixty grains or less.

No person shall sell at retail any poisons, except as herein provided, without affixing to the bottle, box, ves-

sel or package containing the same, a label, printed or plainly written, containing the name of the article, the word "poison," and the name and place of business of the seller, nor shall he deliver poison to any person without satisfying himself that such poison is to be used for legitimate purposes.

It shall be the further duty of any one selling or dispensing poisons, which are known to be destructive to adult human life in quantities of five grains or less, before delivering them, to enter in a book kept for this purpose the name of the seller, the name and residence of the buyer, the name of the article, quantity sold or disposed of, and the purpose for which it is said to be intended, which book of registry shall be preserved for at least two years, and shall at all times be open to the inspection of the coroner or courts of the county in which the same may be kept.

The provisions of this section shall not apply to the dispensing of physicians' prescriptions, specifying poisonous articles, nor the sale to agriculturists of such articles as are commonly used by them as insecticides. Any person failing to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than five nor more than fifty dollars for each and every offence.

256. Any graduate of an accredited medical college, who has had not less than three years continuous practice since the date of his diploma, and who is registered as a practitioner of medicine and surgery, under the act, entitled "An act to provide for the registration of all practitioners of medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty-one, may be registered under this act without examination and be granted a certificate, which shall entitle him to conduct and carry on the retail drug or apothecary business as proprietor and manager thereof, subject to fees provided in sections three and four of this act.

257. It shall be the duty of the State Pharmaceutical Examining Board to investigate all complaints and charges of non-compliance or violation of the provisions of this act, and prosecute all persons so offending whenever there shall appear to the Board reasonable ground for such action.

258. No apothecary, druggist or other person, shall sell or dispose of, by retail, any morphia, strychnia, arsenic, prussic acid or corrosive sublimate, except upon the prescription of a physician, or on the personal application of some respectable inhabitant of full age, of the town or place in which such sale shall be made; and in all cases of such sale, the word poison shall be carefully and legibly marked or placed upon the label, package, bottle or other vessel or thing in which such

24 May, 1887.

Contents of label.  
Seller to satisfy himself as to the use to be made of poisons.

Sales of certain poisons to be registered in a book.

Facts to be registered.

Book to be kept for two years and be open to inspection.

Certain poisonous articles may be sold without a record thereof being kept.

Violation of provisions of this section declared a misdemeanor.  
Penalty.

Ibid, § 11.

Certain graduates of medical colleges may be registered as druggists without examination.

Fees prescribed by this act to be paid.

Ibid, § 12.

State Pharmaceutical Board to investigate all alleged violations of act.

31 March, 1880, § 70.  
P. L., 40.  
P. D., 422.

Sale of poisons regulated.

31 March, 1880.

Every sale to be noted in a register.

5 June, 1893, § 1.  
P. L., 87.  
P. D., 1307.

Dealers in patent medicines must take out a yearly license.\*

10 April, 1849, § 27.  
P. L., 575.  
P. D., 1307.

Penalty.

§ 28.  
P. D., 1307.  
Acts relating to vendors of merchandise extended to patent medicines.

13 May, 1887, § 18.  
P. L., 108.  
P. D., 2222.

Apothecaries can sell intoxicating liquors only on written prescription.

poison is contained\*; and when sold or disposed of otherwise than under the prescription of a physician, the apothecary, druggist or other person selling or disposing of the same, shall note in a register, kept for that purpose, the name and residence of the person to whom such sale was made, the quantity sold, and the date of such sale; any person offending herein, shall be guilty of a misdemeanor, and on conviction, be sentenced to pay a fine, not exceeding fifty dollars.†

**259.** Every individual or co-partnership, who shall engage in the business of manufacturing or vending nostrums or patent medicines, of whatever class or character, shall, for the purpose of taxation, be deemed and taken to be dealers in merchandise, and shall be classed and rated for a yearly license in the same manner, except as is hereinafter provided, as other dealers in merchandise are now classed and rated: *Provided*, That nothing herein contained shall be so construed as to exempt any manufacturer of nostrums or patent medicines, from the payment of the proper license fee, or any part thereof, on the grounds that he is selling goods on his own manufacture, from the place where the same were manufactured.

**260.** Any person convicted of violating the provisions of the preceding sections,‡ shall be fined in a sum not less than fifty nor more than five hundred dollars for each offence; one-half to be paid to the county treasurer for the use of the Commonwealth, and the other half to the person or persons who shall prosecute such offender.

**261.** All the provisions and duties enjoined upon any one by the act entitled "An act graduating duties upon wholesale dealers and retailers of merchandise, and prescribing the mode of issuing licenses and collecting said duties," passed the 7th day of April, 1830, and the several supplements thereto, are hereby extended and declared to apply to this act, except so far as they are inconsistent herewith.

Dealers in patent medicines were held liable under this act. *Laf-fer's Appeal*, 34 Leg. Int., 283.

An apothecary who sells patent medicines is liable for the additional license tax imposed by this act. *Commonwealth v. Fuller*, 4 Luz. Leg. Obs., 225.

**262.** Druggists and apothecaries shall not be required to obtain licenses under the provisions of this act, but they shall not sell intoxicating liquors except upon the written prescription of a regularly registered physician; alcohol, however, or any preparations containing the same, may be sold for scientific, mechanical.

\*This does not apply to a case in which poison is sold as an ingredient of a medicine on the prescription of a physician. *Cwlt. v. Sheriff*, 41 Leg. Int., 366.

†This act embodied in Sec. 10, Act 24, May 1887, P. L., 189, above, 255.

‡Relating to licenses for the manufacture and sale of patent medicines.

or medicinal purposes. Any one violating the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be subject to the same penalties as are provided in the fifteenth section of this act: *Provided*, That no spirituous, vinous, malt or brewed liquors shall be sold or furnished to any person more than once on any one prescription of a physician: *And provided further*, That any physician, who shall wilfully prescribe any intoxicating liquors as a beverage to persons of known intemperate habits shall be guilty of a misdemeanor, and upon conviction thereof, shall be subject to the same penalties and fines as are prescribed in section seventeen. [Said section imposes a fine of not less than fifty nor more than five hundred dollars, and an imprisonment of not less than twenty nor more than ninety days.]

13 May, 1887.

Penalty.

No liquors to be furnished more than once on same prescription.

Druggists are only retailers *sub modo*; a return of them as retailers does not imply that they retail as a beverage.—*Cwlth. v. Porter*, 10 Phila., 217. A druggist could fill a "standing prescription" for intoxicating liquor in good faith, for medical purposes, without violating act 12 April, 1875, §4, P. L., 40. But if he was aware the liquor was to be used as a beverage, the prescription would not shield him. In an emergency he may sell without a prescription.—*Cwlth. v. Patterson*, 16 W. N. C., 193. Where a druggist was convicted of "selling liquor without license," it was held he could not be punished, as the verdict failed to state that the liquor was used as a beverage.—*Rhoads v. Cwlth.*, 43 Leg. Int., 437.

## XII. MEDICAL PRACTICE.

### Anatomical Subjects.

**263.** The standard qualifications of a practitioner of medicine, surgery or obstetrics, shall be and consist of the following, namely: a good moral character, a thorough elementary education, a comprehensive knowledge of human anatomy, human physiology, pathology, chemistry, *materia medica*, obstetrics, and practice of medicine and surgery and public hygiene.

24 March, 1877, § 1.  
PP. L., 4.  
P. D., 1332.

Qualifications of medical practitioners.

**264.** It shall be unlawful, after the passage of this act, for any person to announce himself or herself as a practitioner of medicine, surgery or obstetrics, or to practice the same, who has not received, in a regular manner, a diploma from a chartered medical school, duly authorized to confer upon its *alumni* the degree of doctor of medicine: *Provided*, That this act shall not apply to any resident practitioner of medicine, surgery or obstetrics who has been in such continuous practice in this Commonwealth, for a period of not less than five years previous to the passage of this act.\*

Ibid, § 2.

No person to practice without diploma.

Exception.

\* This section was held to be unconstitutional, as a discrimination against non-resident practitioners, in *Commonwealth v. Irving*, 1 Susq. Leg. Chron., 69. But see below 8 June, 1881, 68, 275.



24 March, 1877. § 2.  
P. D., 1232.

Duties of persons  
practising without  
diploma.

Must register with  
the prothonotary.

Ibid, § 4.  
Regulation of trans-  
ient practice.

Ibid, § 5.  
P. D., 1333.  
Penalty for viola-  
tion.

3 June, 1881. § 1.  
P. L., 72.  
P. D., 1333.  
Medical register to  
be kept by pro-  
thonotary of each  
county.

Ibid, § 2.  
P. D., 1333.  
Diplomas to be  
registered.

**265.** Before any person shall engage in the practice of medicine, surgery or obstetrics, in this Commonwealth, or who has not a diploma as provided for in section second of this act, such person shall make affidavit, under oath or affirmation, before the prothonotary of the county where such person intends practising, setting forth the time of continuous practice, and the place or places where such practice was pursued in this Commonwealth; thereupon, the prothonotary shall enter the same of record in a book specially provided therefor, to be kept in his office, and open to the inspection of the public; and for such service he shall receive the sum of two dollars, to be paid by the affiant, one half for the use of the prothonotary, the other for the use of the county.

**266.** Any person who shall attempt to practice medicine or surgery for a valuable consideration, by opening a transient office, within this Commonwealth, or who shall, by hand-bill or other form of written or printed advertisement, assign such transient office, or other place, to persons seeking medical or surgical advice or prescription, or who shall itinerate from place to place, or from house to house, and shall propose to cure any person, sick or afflicted, by the use of any medicine, means or agency whatsoever, for a valuable consideration, shall, before being allowed to practice in this manner, appear before the clerk of the court of quarter sessions of the county wherein such person desires to practice, and shall furnish satisfactory evidence to such clerk that the provisions of this act have been complied with; and shall, in addition, take out a license for one year, and pay into the county treasury, for the use of such county, the sum of fifty dollars therefor; whereupon, it shall be the duty of such clerk to issue to such applicant a proper certificate of license, on payment of the fee of five dollars for his services.

**267.** Any person who shall violate or fail to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor; and on conviction before any court, shall be sentenced to pay a fine not less than two hundred dollars nor more than four hundred dollars, for each and every offence, for the use of the county wherein such misdemeanor is committed.

**268.** The prothonotary of each county shall purchase a book of suitable size, to be known as the medical register of the county (if such book has not been purchased already), and shall set apart one full page for the registration of each practitioner, and when any practitioner shall depart this life, or remove from the county, he shall make a note of the same at the bottom of the page, and shall perform such other duties as are required by this act.

**269.** Every person who shall practice medicine or surgery, or any of the branches of medicine or surgery, for gain, or shall receive or accept for his or her ser-

vices, as practitioner of medicine or surgery, any fee or reward, directly or indirectly, shall be a graduate of a legally chartered medical college or university, having authority to confer the degree of doctor of medicine (except as provided for in section five of this act), and such person shall present to the prothonotary of the county in which he or she resides or sojourns, his or her medical diploma, as well as a true copy of the same, including any indorsements thereon, and shall make affidavit before him that the diploma and indorsements are genuine; thereupon the prothonotary shall enter the following in the register, to wit: the name in full of the practitioner, his or her place of nativity, his or her place of residence, the name of the college or university that has conferred the degree of doctor of medicine, the year when such degree was conferred, and in like manner any other degree or degrees that the practitioner may desire to place on record, to all of which the practitioner shall likewise make affidavit before the prothonotary; and the prothonotary shall place the copy of such diploma, including the indorsements, on file in his office, for inspection by the public.

8 June, 1881.

Enteries on the registry.

270. Any person whose medical diploma has been destroyed or lost, shall present to the prothonotary of the county in which he or she resides or sojourns, a duly certified copy of his or her diploma, but if the same is not obtainable, a statement of this fact, together with the names of the professors whose lectures he or she attended, and the branches of study upon which each professor lectured, to all of which the practitioner shall make affidavit before the prothonotary; after which, the practitioner shall be allowed to register, in manner and form as indicated in section two of this act; and the prothonotary shall place such certified statement on file in his office, for inspection by the public.

Ibid, § 2.

Statement, where diploma is lost.

271. Any person who may desire to commence the practice of medicine or surgery in this State, after the passage of this act, having a medical diploma issued or purporting to have been issued by any college, university, society or association in another State or foreign country, shall lay the same before the faculty of one of the medical colleges or universities of this Commonwealth for inspection, and the faculty being satisfied as to the qualifications of the applicant and the genuineness of the diploma, shall direct the dean of the faculty to indorse the same, after which such person shall be allowed to register, as required by section two of this act.

Ibid, 4.

Foreign diplomas, how registered.

A certificate of the secretary of a medical college of his belief that the diploma of a medical college of another State, is genuine, and legally issued, does not entitle it to registration. *Bower's Case*, 2 Del. Co. Rep., 168.

The requirements of this act should be strictly complied with. The prothonotary's duties are ministerial and he can waive none of the requirements.—*In re Registration*, 16 W. N. C., 538. This is

8 June, 1881.

not an *ex post facto* law, and is valid and constitutional. But the oath required therein may be administered by the deputy prothonotary.—Cwilt. v. Taylor, 12 Luz. Leg. Reg., 182.

Ibid, § 5.  
P. D., 1333.

Registry of practicing physicians without diplomas.

**272.** Any person who has been in the continuous practice of medicine or surgery in this Commonwealth since 1871, without the degree of doctor of medicine, shall be allowed to continue such practice; but such person shall nevertheless appear before the prothonotary of the county in which he or she resides and shall present to him a written statement of these facts, to which the petitioner shall make affidavit. Thereupon the prothonotary shall enter the following in the register, to wit: The name in full of the practitioner; his or her place of nativity; his or her place of residence; the time of continuous practice in this Commonwealth, and the place or places where such practice was pursued, to all of which the practitioner shall likewise make affidavit; and the prothonotary shall place the certified statement on file in his office for inspection by the public.

Ibid, § 6.

Fee for registration.

**273.** Every practitioner who shall be admitted to registration shall pay to the prothonotary one dollar, which shall be compensation in full for registration, and the prothonotary shall give a receipt for the same.

Ibid, § 7.  
Penalty for violation.

**274.** Any practitioner who shall present to the faculty of an institution for indorsement, or to any prothonotary, a diploma which has been obtained fraudulently, or is in whole or in part a forgery, or shall make affidavit to any false statement to be filed or registered, or shall practise medicine or surgery without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act shall be deemed guilty of a misdemeanor, and on conviction shall be punished for each and every offence by a fine of one hundred dollars, one-half to be paid to the prosecutor and the other half to be paid to the county, or be imprisoned in the county jail of the proper county for a term not exceeding one year, or both or either, at the discretion of the court.

Ibid, § 8.

Non-resident physicians.

**275.** Nothing in this act shall be so construed as to prevent any physician or surgeon, legally qualified to practise medicine or surgery in the State in which he or she resides, from practicing in this Commonwealth; but any person or persons opening an office or appointing any place where he or she may meet patients or receive calls shall be deemed a sojourner, and shall conform to the requirements of this act.

Prescribing intoxicating liquors.

**276.** [As to physicians prescribing intoxicating liquors. see act 13 May, 1887, § 16. P. L., 108, XI, 262.]

31 March, 1870, § 1.  
P. L., 706.  
W. D., 470.

None to practice medicine in Philadelphia without degree of M. D.  
Exceptions.

**277.** It shall be unlawful for any person to commence or continue the practice of medicine or surgery in the county of Philadelphia who has not graduated with the degree of doctor of medicine, and received a diploma from a chartered medical school or other institution authorized to grant medical diplomas: *Provided*, That the provisions of this section shall not apply to persons

who have been ten years in continuous regular practice in said county, though they may not have graduated as aforesaid, nor to persons who are reading medicine under the control and instruction of a physician or surgeon who has the qualification to practise prescribed by this section, when such persons have the assent of such preceptor to practise: *Provided, however,* That such student shall not locate any office or business station outside the usual office of his preceptor.

31 March, 1870.

278. Any person who shall attempt to practise medicine or surgery, by opening a transient office in the aforesaid county, or who shall, by handbill or other form of written or printed advertisement, assign such transient office, or other place, to meet persons seeking medical or surgical advice or prescription, shall, before being allowed to practise as aforesaid, appear before the clerk of the courts of the county, and shall furnish satisfactory evidence to such clerk of the courts that the provisions of section one of this act have been complied with, and shall, in addition, take out a license for one year, by payment of a license fee, for the use of the county, of two hundred dollars: *Provided,* That the provisions of this act shall not apply to dentists: *And provided further,* That physicians or surgeons commencing practice in the aforesaid county, with the intention of remaining permanently therein, shall not be subject to the provisions of section one of this act.

Ibid, § 2.

Persons attempting to practise medicine by opening transient office to pay annual license fee of \$200.

This act not to apply to dentists.

279. If any persons shall violate any of the provisions of this act, every such person shall be guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding five hundred dollars, or less than two hundred dollars, or imprisoned not exceeding six months, at the discretion of the court.

Ibid, § 3.

Penalty.

### Anatomical Subjects.

280. The professors of anatomy, the professors of surgery, the demonstrators of anatomy and the demonstrators of surgery of the medical and dental schools and colleges of this Commonwealth, which are now or may hereafter become incorporated, together with one representative from each of the unincorporated schools of anatomy or practical surgery, within this Commonwealth, in which there are, from time to time, at time of the appointment of such representatives, shall be not less than five scholars, shall be and hereby are constituted a board for the distribution and delivery of dead human bodies, hereinafter described, to and among such persons as, under the provisions of this act, are entitled thereto. The professor of anatomy in the University of Pennsylvania, at Philadelphia, shall call a meeting of said board for organization, at a time and place to be fixed by him, within thirty days after the passage of this act. The said board shall have full power to establish rules and regulations for its government, and to appoint and re-

12 June, 1883, § 1.  
F. L., 119.  
P. D., 94.

Board for the distribution of bodies for anatomical purposes.

Their powers.

12 June, 1833.  
Records.

move proper officers, and shall keep full and complete minutes of its transactions; and records shall also be kept, under its direction, of all bodies received and distributed by said board, and of the persons to whom may be distributed, which minutes and records shall be open at all times to the inspection of each member of said board, and of any district attorney of any county within this Commonwealth.

Ibid, § 2.  
Municipal officers  
to give notice to  
the board.

**281.** All public officers, agents and servants, and all officers, agents and servants of any and every county, city, township, borough, district and other municipality, and of any and every almshouse, prison, morgue, hospital, or other public institution having charge or control over dead human bodies; required to be buried at the public expense, are hereby required to notify the said board of distribution or such person or persons as may, from time to time, be designated by said board or its duly authorized officer or agent, whenever any such body or bodies come to his or their possession, charge or control, and shall, without fee or reward, deliver such body or bodies, and permit and suffer the said board and its agents, and the physicians and surgeons from time to time designated by them, who may comply with the provisions of this act, to take and remove all such bodies, to be used within this State for the advancement of medical science; but no such notice need be given, nor shall any such body be delivered, if any person claiming to be, and satisfying the authorities in charge of said body that he or she is, of kindred or is related by marriage to the deceased, shall claim the said body for burial, but it shall be surrendered for interment; nor shall notice be given or body delivered, if such deceased person was a traveller who died suddenly, in which case the said body shall be buried.

And deliver bodies  
without charge.

To be used for sci-  
entific purposes.

Exceptions.

Ibid, § 2.  
Distribution regu-  
lated.

**282.** The said board, or their duly authorized agent, may take and receive such bodies so delivered as aforesaid, and shall, upon receiving them, distribute and deliver them to and among the schools, colleges, physicians and surgeons aforesaid, in manner following: Those bodies needed for lectures and demonstrations by the said schools and colleges, incorporated and unincorporated, shall first be supplied, the remaining bodies shall then be distributed proportionately and equitably, preference being given to said schools and colleges; the number assigned to each to be based upon the number of students in each dissecting or operative surgery class, which number shall be reported to the board at such time as it may direct. Instead of receiving and delivering said bodies themselves, or through their agents or servants, the board of distribution may, from time to time, either directly or by their authorized officer or agent, designate physicians and surgeons who shall receive them, and the number which each shall receive: *Provided always, however,* That schools and colleges, incorporated and unincorporated, and physicians or

surgeons of the county where the death of the person or such person described takes place, shall be preferred to all others: *And provided also*, That for this purpose, such dead body shall be held subject to their order, in the county where the death occurs, for a period not less than twenty-four hours.

**283.** The said board may employ a carrier or carriers for the conveyance of said bodies, which shall be well enclosed within a suitable encasement, and carefully deposited free from public observation. Said carrier shall obtain receipts by name, or if the person be unknown, by a description of each body delivered by him, and shall deposit said receipt with the secretary of the said board.

12 June, 1882.

*Ibid.*, § 4.

Carriage of bodies.

**284.** No school, college, physician or surgeon shall be allowed or permitted to receive any such body or bodies, until a bond shall have been given to the Commonwealth by such physician or surgeon, or by or in behalf of such school or college, to be approved by the prothonotary of the court of common pleas in and for the county in which such physician or surgeon shall reside, or in which such school or college may be situate, and to be filed in the office of said prothonotary; which bond shall be in the penal sum of one thousand dollars, conditioned that all such bodies which the said physician or surgeon, or the said school or college, shall receive thereafter shall be used only for the promotion of medical science within this State; and whosoever shall sell or buy such body or bodies, or in any way traffic in the same, or shall transmit or convey, or cause to procure to be transmitted or conveyed, said body or bodies, to any place outside of this State, shall be deemed guilty of a misdemeanor, and shall, on conviction, be liable to a fine not exceeding two hundred dollars, or be imprisoned for a term not exceeding one year.

*Ibid.*, § 5.

Schools, &c., to give bond, that bodies shall be used for scientific purposes only.

Traffic in bodies prohibited.

Not to be removed from the State.

Penalty.

**285.** Neither the Commonwealth nor any county or municipality, nor any officer, agent or servant thereof, shall be at any expense by reason of the delivery or distribution of any such body, but all the expenses thereof, and said board of distribution shall be paid by those receiving the bodies, in such manner as may be specified by said board of distribution, or otherwise agreed upon.

*Ibid.*, § 6.

Expenses.

**286.** Any person having duties enjoined upon him by the provisions of this act who shall neglect, refuse or omit to perform the same as hereby required, shall, on conviction thereof, be liable to fine of not less than one hundred nor more than five hundred dollars for each offense.

*Ibid.*, § 7.

Penalty for violations of this act.

### XIII. REGISTRATION OF VITAL STATISTICS.

#### Philadelphia. Pittsburgh. General Law.

8 March, 1880, § 1.  
P. L., 180.  
P. D., 1479.

Health-officer to register marriages, &c.

And lay an annual abstract before councils.

**287.** The city commissioners of the city of Philadelphia shall supply the health officer with separate books, in which he shall register, in the manner hereafter directed, the returns made to him of the marriages which may be contracted, and of the births and deaths which may occur within the said city; he shall also cause an abstract of the same to be made, in the month of February next ensuing, and annually thereafter in said month, (presented) to the city councils, through the board of health; which abstract shall contain a statement of the marriages solemnized, and of the number of births and of deaths, with the reported causes thereof, which have occurred in the said city during the year next preceding the first day of January, with such other information and suggestions in relation thereto, as he may deem of practical utility for the promotion of public health, and of general interest to the city.

*Ibid*, § 2.

Names and residences of clergymen, magistrates, physicians and sextons to be registered at office of board of health.

**288.** It shall be the duty of clergymen of all denominations, of clerks or keepers of the records of all churches and religious societies, as also of every magistrate, and of other persons by or before whom any marriage may hereafter be solemnized or contracted, and of every practising physician, and of every practitioner of midwifery, and of every undertaker and superintendent or sexton of any cemetery or burying ground in the said city of Philadelphia, on or before the first day of July next ensuing (the day in which the law goes into effect), to report his, her or their names and places of residence to the health officer, at the office of the board of health; and it shall be the duty of the health officer to have the same properly registered, in index-form, in suitable books, to be furnished to the city commissioners, at the order of the board of health. In the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the health officer of the fact, within thirty days after such removal; except where the persons removing shall cease to act in such official capacity as makes them subject to the provisions of this act.

*Ibid*, § 2.

Physicians, or coroner to give certificates to undertakers.

**289.** Whenever any person shall die, in the city of Philadelphia, it shall be the duty of the physician who attended during his or her last sickness, or of the coroner, when the case comes under his notice, to furnish, within forty-eight hours after the death, to the undertaker or other person superintending the burial, a certificate, setting forth, as far as the same can be ascertained, the full name, sex, color, age and condition

(whether married or single), of the person deceased, and the cause and date of death.

**290.** No person having the charge, as sexton or otherwise, of any vault, burying-ground or cemetery, within the said city, shall inter, or allow to be interred, or place, or allow to be placed, in any vault, burying-ground or cemetery, the dead body of any person; nor shall any undertaker or other person remove the dead body of any person, who has died in the said city, and has not been buried, to any place beyond the limits of the said city, without first procuring the certificate of the attending physician, or of the coroner. To said certificate, the undertaker or other person having charge of the body shall, as far as can be ascertained, add the occupation of the deceased, the place of birth, the ward, street, and number of the house in which the death occurred, the place and date of interment, and, where the deceased is a minor, the full names of the parents. In case any person shall die without the attendance of a physician, or if the physician who did attend at the time of the death, refuses or neglects to furnish a certificate as aforesaid, it shall be the duty of the undertaker, or of any other person acquainted with the facts, to report the same to the health officer, who shall be authorized to give a certificate of death as aforesaid, provided it be not a case requiring the attendance of the coroner. Every sexton or other person having charge of any vault, burying-ground or cemetery within the said city, and every undertaker or other person who shall remove any dead body from or out of the said city, shall return the said certificates to the health officer, before twelve o'clock M., on the Saturday of every week, accompanied by a schedule of the same, which returns shall be published weekly by the health officer, in such manner as may be designated by the board of health.

8 March, 1880, § 4.

No corpse to be interred without such certificate.

To which the undertaker shall add certain matters.

When health officer may give certificate.

When certificates to be returned to health-officer.

Returns to be published weekly.

*Ibid.*, § 5.

Penalty for refusing certificate.

**291.** In case any physician, or the coroner, shall refuse or neglect to furnish such certificate as aforesaid, he shall forfeit and pay the sum of five dollars for each offence, and every undertaker, sexton, or other person removing the dead body of any person, or having charge of any vault, burying-ground or cemetery, who refuses or neglects to perform any of the duties required by this act, shall forfeit and pay for every such offence the sum of twenty-five dollars, which sums, shall in every case be recoverable in the manner and for the uses prescribed in an act, entitled "An act for establishing a health office, to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other purposes."

**292.** Every person practising midwifery, in the city aforesaid, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule, to be furnished by the health officer.

*Ibid.*, § 6.

Duties of persons practising midwifery.



rch, 1880.

Schedule of births  
to be returned to  
health-officer.

cer. This schedule shall contain a list of the births which have occurred under his or her care during the month, and shall set forth, as far as the same can be ascertained, the full name of each child (if any name shall have been conferred), its sex, color, the full name and occupation of its parent or parents, the day and place of its birth; and the said schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first day of each and every month, to the health officer, or to any other authorized person calling for the same. In case the birth of any child shall have occurred, without the attendance of a physician or of a practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child, to report its birth to the health officer, in the manner and form, and within the period above required.

Ibid, § 7.

Duties of persons  
celebrating marriages.

293. It shall be the duty of every clergyman and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration every three months, to the health officer, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage, and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.

Ibid, § 8.

Penalty for refusing to register  
place of residence.

294. Every clergyman and every magistrate, and every clerk or keeper of the records of all religious societies, and every practising physician, and every person practising midwifery in the city aforesaid, and every undertaker and superintendent or sexton of any cemetery or burying-ground in the city of Philadelphia, who shall neglect or refuse to leave his or her name and place of residence at the health office, as herein provided, and who shall refuse or neglect to perform any other of the duties required as aforesaid, shall forfeit and pay for each offence, the sum of ten dollars, to be recovered in the manner and for the uses prescribed in an act, entitled "An act for establishing a health office, and to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other purposes."

Ibid, § 9.

Certificates to be  
evidence.

295. The books or registers kept by the health officer, or a certificate duly certified by him, as containing a copy of the record of any marriage, birth or death, shall hereafter be admitted in any court of the State, as *prima facie* evidence of said marriage, birth or death.

296. The registry of marriages, births and deaths shall be kept in separate books; and there shall be general indexes to the record of all marriages, births and deaths, which indexes shall also be kept in separate books.

8 March, 1880 § 10.  
How registers to be kept.

297. The health officer shall receive fifty cents for granting a certificate or certified copy of the record of any marriage, birth or death, and ten cents for making a search for either a marriage, birth or death, which sums shall be paid by the party applying for the certificate or search; but the said registers shall at all times be accessible to physicians, clergymen and lawyers, without charge.

Ibid, § 11.

298. This section is identical with Sec. 8, 5 May, 1876, *infra* 320, with this addition: *Deaths*—Full name of deceased; color, sex, age; married or single; occupation; birthplace; date and cause of death; when a minor, the name of the father and mother; ward, street and number of the house; date of burial; date of certificate and registration.

Ibid, § 12.

299. The health officer shall keep on hand, at all times, a supply of blanks for gratuitous distribution to all persons whose duty it shall be to make returns under this act. The said blanks shall be prepared in the form of books, and the margins shall correspond with the printed titles in the books of the health officer, as required by the twelfth section of this act; and the health officer, in consideration of such additional services, shall receive the sum of two hundred dollars, besides his present salary, to be paid to him in the manner now directed by law.

Ibid, § 13.

[See act of 27 March, 1819, § 2, W. D., p. 14, § 13, repealed by sections 6, 8, of above act.]

### Pittsburgh.

300. The board of health shall furnish separate books in which shall be registered, in the manner hereinafter directed, the returns made to said board of the marriages which may be contracted, and of the births and deaths which may occur in the city of Pittsburgh.

16 April, 1870. § 2.  
P. L., 1194.  
P. D., 1482.

Registration in Pittsburgh.

301. It shall be the duty of clergymen of all denominations, of clerks or keepers of the records of all churches and religious societies, as also of every magistrate and of other persons, by or before whom any marriage may hereafter be solemnized or contracted, and of every practicing physician, and of every practitioner of midwifery, and of every undertaker, and superintendent or sexton of any cemetery or burial ground, in the said city of Pittsburgh, on or before the first day of May next ensuing (the day in which the law goes into effect), to report his, her or their names and places of residence to the health officer, at the office of the board of health; and it shall be the duty of the health officer to have the same properly registered. in index form, in suitable books, to be furnished by the board

Ibid, § 2.

Duties of clergy-  
men, magistrates,  
physicians, under-  
takers, sextons,  
&c.

16 April, 1873.

of health; in the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the health officer of the fact, within thirty days after such removal, except where the persons removing shall cease to act in such official capacity, as makes them subject to the provisions of this act.

*Ibid*, § 2.

Physicians to give certificates to undertaker.

302. Whenever any person shall die in the city of Pittsburgh, it shall be the duty of the physician who attended during his or her last illness, or of the coroner (when the case comes under his notice), to furnish to the undertaker or other person superintending the burial, a certificate, setting forth, as far as the same can be ascertained, the full name, occupation, sex, color, age and condition (whether married or single) of the dead persons, and the cause and date of death. In case any person shall die without the attendance of a physician, or if the physician who did attend at the time of the death, refuses or neglects to furnish such certificate, it shall be the duty of the physicians of the board of health, upon being notified thereof, to make the necessary examination in such cases, and give a certificate of death as aforesaid: *Provided*, It be not a case requiring the attendance of the coroner.

*Ibid*, § 4.

No corpse to be interred without such certificate.

303. It shall be the duty of every undertaker or other person, before removing any corpse for burial, within the city, or elsewhere, to obtain from the board of health a permit so to do, which shall be granted by said board; but before obtaining such permit he shall deposit, in the office of the board of health, the physician's or coroner's certificate, together with his own certificate, setting forth, as nearly as can be ascertained, the birth-place of the party, ward, number and street of late residence in the city, time of residence therein, place of previous residence, duration of last illness, and the place and date of intended interment; which certificate shall be signed by the undertaker, as well as the physician, or surgeon in attendance at the time of death. And no sexton or other person shall assist in, or assent to, or allow any such interment, or aid or assist about preparing any grave or place of deposit for any such body, for which such permit has not been given authorizing the same; and it shall be the duty of any sexton or other person who shall receive any such permit, to preserve and to return the same to the board of health, on or before the first Monday succeeding each interment.

*Ibid*, § 5.

Duties of persons practicing midwifery.

304. Every person practising midwifery in the city aforesaid, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule, to be furnished by the board of health. This schedule shall contain a list of the births which have occurred under his or her care during the month, and shall set forth, as far as the same can be as-

Schedule of births to be returned.

certained, the full name of each child (if any name shall have been conferred), its sex, color, the full name and occupation of its parent or parents, the day and place of its birth ; and the said schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first day of each and every month, to the health-officer, or to any other authorized person. In case the birth of any child shall have occurred without the attendance of a physician or practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child to report its birth to the health-officer, in the manner and form, and within the period above required.

16 April, 1870.

305. It shall be the duty of every clergyman, and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration of every three months, to the health-officer, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage, and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.

Ibid, § 6.

Duties of persons celebrating marriages.

306. In case any clergyman, magistrate, physician, coroner, midwife, undertaker, sexton, clerk or any other person as aforesaid shall violate any of the provisions of this act, or refuse or neglect to perform any of the duties required by the same, he, she or they shall forfeit and pay, for every such offence, the sum of not less than five nor more than twenty dollars for the use of the board of health ; which sum or sums shall be recoverable as debts of like amount, and on non-payment of the same, a *capias ad satisfaciendum* may issue.

Ibid, § 7.

Penalties for neglect.

307. The books or registers kept by the health-officer, or a certificate duly certified by him as containing a copy of the record of any marriage, birth or death, shall hereafter be admitted in any court of the State, as *prima facie* evidence of said marriage, birth or death.

Ibid § 8.

Registers and certificates to be evidence.

308. The registry of marriages, births, and deaths shall be kept in separate books; and there shall be general indexes to the record of all marriages, births and deaths, which indexes shall also be kept in separate books.

Ibid, § 9.

How registers to be kept.

309. The health-officer shall receive, for the use of the board of health, fifty cents for granting a certificate or certified copy of the record of any marriage, birth or death, and ten cents for making search for either a marriage, birth or death, which sums shall be paid by the party applying for the certificate or search; but

Ibid, § 10.

Fees of health officer.

18 April, 1870.

Ibid. § 11.

How registers to be prepared.

Marriages.

Births.

Deaths.

Distribution of blanks.

Power of board of health to make rules.

11 April, 1888. § 1.  
P. L., 631.  
P. D., 1431.

the said registers shall, at all times, be accessible to physicians, clergymen and lawyers, without charge.

**310.** In order to secure uniformity and despatch in the registration herein provided for, the books shall contain, upon the margin of each page, printed titles, with corresponding blanks for suitable entries for marriages, births and deaths, in the order to-wit :

*Marriages.*—Full name of husband. Occupation. Residence. Birthplace. Age, when married. Full name of wife, previous to marriage. Residence. Birthplace. Age, when married. Time of marriage. Color of the parties. Ceremony employed. Name of the person performing the marriage. Residence of the last named person. Date of certificate. Date of registration.

*Births.*—Full name of the child. Sex. Color. Full name of the father. His occupation. Full name of the mother. Day, month and year of the birth. Street and number of house where born. Name of physician or other person signing certificate. His residence. Date of certificate. Date of registration.

*Deaths.*—Full name of the deceased. Color. Sex. Age. Married or single. Occupation. Date of death. Cause of death. Duration of last illness. Birthplace. Ward, number and street of late residence. Time of residence therein. Place of previous residence. Place of intended interment. Date of intended interment. Date of certificate. Date of registration. The board of health shall keep on hand at all times, a supply of blanks for gratuitous distribution, to all persons whose duty it shall be to make returns under this act. The board of health shall have power to make all rules and regulations for carrying the provisions of this act into effect.

**311.** Where any person may have been married, under the laws of the State of Pennsylvania, previous to the date of the passage of this act, and who may have not received, or who may have lost the original marriage certificate, and the record of said marriage may have been lost \* \* \* the fact may be proven by the affidavit of the party, or parties, so married, and the name of the person who performed the ceremony being given, that due \* \* \* search has been made for said record, and that the same could not be found; and the identity and truth of the party, or parties, be verified by at least two witnesses, who may have known the parties so married, to have lived and cohabited together, as husband and wife, and that their marriage was never doubted or disputed, that an acknowledgment was made in their presence, that they were husband and wife, and the proof being satisfactory to the health officer, a record shall be made, as specified under the law, approved March eighth, one thousand eight hundred and sixty, and the supplement thereto.

312. The health officer of the city of Philadelphia shall register, in a book for that purpose, to be furnished by the city commissioners of said city, upon presentation to him of certificates, properly authenticated, by either the affidavit of the clergyman who performed the marriage service, or in case of his death, the affidavit of two persons that were acquainted with his handwriting and knew his signature, and that the signature attached to such certificate of marriage is the genuine signature of such clergyman, such marriages as have occurred prior to the passage of the act to which this is a supplement; and upon demand made of him by any persons interested, he shall give a certificate of such registration of marriage, duly certified by him, which shall be of like force and effect, as evidence or otherwise, as the certificates provided for in the act to which this is a supplement; and for such certificate he shall be entitled to receive the same fees as are allowed in the said act.

22 March, 1865, § 1.

P. L., 560.

P. D., 1481.

Registration of  
prior marriages.

313. Whenever boards of health are established by law in the cities of the Commonwealth, said boards shall furnish separate books, in which shall be registered, in the manner hereinafter directed, the returns made to said boards of the marriages which may be contracted, and the births and deaths that may occur in said cities.

5 May, 1876, § 1.

P. L., 113.

P. D., 1477.

Registration in all  
cities having  
boards of health.

314. It shall be the duty of clergymen of all denominations, of clerks or keepers of records of all churches and religious societies, as also of every magistrate, and of other persons by or before whom any marriage may hereafter be solemnized or contracted, and of every practitioner of midwifery in said cities, on or before the first day of July next ensuing (the day in which the law goes into effect), to report his, her or their names, and places of residence to the secretary of the board of health at the office of the board of health; and it shall be the duty of the secretary of the board of health to have the same properly registered in index form, in suitable books to be furnished by the board of health. In the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the secretary of the board of health of the fact, within thirty days after such removal, except when the persons removing shall cease to act in such official capacity as makes them subject to the provisions of this act.

Ibid, § 2.

Duties of clergy-  
men, magistrates,  
physicians, &c.

315. Every person practising midwifery in said cities, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule to be furnished by the board of health; this schedule shall contain a list of the births which have occurred under his or her care during the preceding three months, and shall set forth, as far as the same can be ascertained, the full name of each child (if any name shall have been conferred), its sex, color, the full

Ibid, § 2.

Duties of mid-  
wives.

5 May, 1876.

To return schedule, containing full statistics, every three months, to board of health.

Where no midwife in attendance parents to make report.

Ibid, § 4.

Returns of marriages.

Persons by whom marriages performed to make return to board of health every three months.

Ibid, § 5.

Penalty for violation.

Ibid, § 6.

Registers of board of health to be evidence of birth, marriage or death.

Ibid, § 7.

Fees for certificates and searches.

name and occupation of its parent or parents, the day and place of its birth; and the schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first days of October, January, April and July, or within ten days thereafter, to the secretary of the board of health, or to any other authorized person. In case the birth of any child shall have occurred without the attendance of a physician or practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child to report its birth to the secretary of the board of health, in the same manner and form, and within the period above required.

316. It shall be the duty of every clergyman, and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration of every three months, to the secretary of the board of health, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage, and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.\*

317. In case any clergyman, magistrate, physician, midwife, clerk or any other person as aforesaid, shall violate any of the provisions of this act, or refuse or neglect to perform any of the duties required by the same, he, she or they shall forfeit and pay for every such offence, the sum of not less than five nor more than twenty dollars, for the use of the board of health; which sum or sums shall be recoverable as debts of like amount are now by law recoverable, and on non-payment of the same, a *capias ad satisfaciendum* may issue.

318. The books or registers kept by the secretary of the board of health, or a certificate duly certified by him as containing a copy of the record of any marriage or birth, shall hereafter be admitted in any court of the State as *prima facie* evidence of said marriage, birth or death.

319. The secretary of the board of health shall receive and pay into the city treasury, fifty cents for granting a certificate or certified copy of the record of any mar-

\* *Marriage Licenses.* The act of 23 June, 1885, § 1, P. L., 346, P. D., 2234, requires a license to be obtained from the clerk of the orphans' court, before any marriage is performed. And by an amendment to said act passed 23 May, 1887, P. L., 170, P. D., 2235, in order to obtain such license the person or persons applying therefor must verify by oath before the clerk the legality of the proposed marriage.

riage or birth, and ten cents for making a search for either a marriage or birth, which sum shall be paid by the parties applying for the certificate or search; but the said register shall at all times be accessible to physicians, clergymen and lawyers without charge.

5 May, 1876.

**320.** In order to secure uniformity and dispatch in the registration herein provided for, the books shall contain upon the margin of each page, printed titles, with corresponding blanks for suitable entries for marriages and births, in the order to wit:

Ibid, § 8.

Form of registry.

**Marriages**—Full name of husband, occupation, residence, birth-place, age when married; full name of wife previous to marriage, residence, birth place, age when married; time of marriage, color of parties, ceremony employed, name of person performing the marriage, residence of the last named person, date of certificate, date of registration.

Marriages.

**Births**.—Full name of the child, sex, color; full name of the father, his occupation; full name of the mother; day, month and year of the birth; street and number of house where born; name of physician or other person signing certificate; his residence; date of certificate, date of registration.

Births.

**321.** The said boards of health shall have power to make all rules and regulations for carrying the provisions of this act into effect: *Provided, however,* That the provisions of this act shall not apply to cities of the first and second classes.

Ibid, § 9.

Power of boards of health to make rules.

#### XIV. CEMETERIES AND BURIALS.

**322.** The mayor, aldermen, and citizens of Philadelphia, in common council assembled, shall have power, by their ordinance for that purpose, to prohibit any future interments within such parts of the city of Philadelphia wherein they shall judge such prohibition necessary, and to impose such fines for any breach of such ordinance as they may deem necessary.\*

22 April 1794 § 21.  
3 Dal., 553.  
B. P. D., 32.

Power of councils to prohibit interments.

**323.** Whenever any person shall die in the city, districts, or townships aforesaid [Philadelphia], the physician or surgeon who shall have attended such person, as a physician or surgeon, during his or her last sickness, shall leave a note in writing, signed with his name, with some one of the family in the house where such person shall have died, specifying the name and apparent age of the deceased, and the disease of which he or she shall have died. And every physician or surgeon refusing or neglecting to make and deliver such

29 January, 1818, §26.  
P. L., 82  
W. D., 12.

Physicians to leave a note at house where any one has died, specifying name, disease, &c., of deceased.

Penalty for non-compliance.

\* The acts regulating the duties of clergymen, magistrates, physicians, undertakers, sextons, &c., with regard to registration of deaths and interments will be found under XIII, *Registration of Vital Statistics*.



29 January, 1818.

No sexton to permit interment without receiving such note in writing.

Sexton to enter contents of said note on blank schedule to be delivered every Saturday to health officer for publication.

Penalty.

31 March, 1860, § 47.  
F. L., 395.  
P. D., 229.

Wanton injury to cemeteries, &c., and violation of sepulchre.

5 April, 1840 § 1.  
F. L., 397.  
P. D., 229.

Opening streets through cemeteries.

note shall forfeit the sum of five dollars. And that no sexton of any church, or other person having charge of any cemetery, vault, or burying-ground, in the city, districts, or townships aforesaid, shall permit any dead body to be interred therein, until he has received such note in writing so signed as aforesaid; or in case no physician, or surgeon shall have attended such deceased person, or the physician or surgeon who did attend shall have neglected or refused to leave such note, then a like note signed by some of the family in which such person shall have died. The contents of which note, in writing, shall be entered by such sexton on a blank schedule to be furnished by the clerk of the health office, or such other person as the board of health shall direct, and delivered, together with the said schedule, on the Saturday of every week, to the health-officer for publication in such form as may be designated by the board of health. And that every sexton, or other person having charge of any place of interment, neglecting or refusing to perform any of the duties required by this act, shall forfeit the sum of twenty five dollars.

**324.** Any person who shall wilfully and maliciously destroy, mutilate, deface, injure or remove any tomb, monument, gravestone, or other edifice, placed in any cemetery or graveyard, appropriated to and used for the interment of human beings, in this Commonwealth, or shall wilfully and maliciously injure, destroy or remove any fence, railing or other work for the protection or ornament of such places of interment; or shall wilfully open any tomb, vault or grave, within the same, and clandestinely remove any body or remains therefrom; or maliciously destroy any tree or shrubbery growing in such cemetery or graveyard; shall be guilty of a misdemeanor, and on conviction of either of the said offences, be sentenced to undergo an imprisonment not exceeding one year, or to pay a fine not exceeding one thousand dollars, or both or either, at the discretion of the court.\*

**325.** It shall not be lawful to open any street, lane, alley or public road through any burial-ground or cemetery within this Commonwealth,† any laws heretofore

\* This section is the consolidation of various enactments found in laws incorporating cemetery companies, and in general laws, having for their object the repression of the violation of sepulchre: such are the second section of act 5 April, 1849, P. L., 397; and the act 7 May, 1855, P. L., 462. See act 10 Feb., 1871, P. L., 38, containing special provisions for Beaver county, essentially the same as 31 March, 1860, § 47, *supra*. The act of 19 May, 1879, § 1, P. L., 64, P. D., 452, punishes by fine or imprisonment any wilful injury to flowers, shrubbery, &c., in cemeteries, and trespass upon private inclosures in the same.

By the act 16 March, 1861, P. L., 136, no slaughter-house, manure, or bone-dust factory, soap factory, distillery or tannery, shall be erected within two hundred yards of any incorporated cemetery.

† A subsequent statute appointing commissioners to survey and lay out such streets, within the limits of a borough, as they shall deem necessary, does not empower them to locate a street over any part of a burial-ground. *Egypt street*, 2 Grant, 455. But in the case of *Twenty-second street*, 102 Penn. St., 108, it was held that

passed to the contrary notwithstanding: *Provided*, That this section shall not extend to the city and county of Philadelphia.

**326.** When any church of the city or county of Philadelphia shall resolve to purchase and use a new place of burial for the congregation of said church, or to remove thereto the remains of such deceased persons as may have been interred in a former place of burial, they shall certify such fact to the board of health by the proper officer of such church; and the board of health, thereupon, unless they shall determine the proceeding to be injurious to the public health, shall grant a permit for the same, in the manner that they now do in individual cases.

**327.** [This act authorizes all organized cemetery companies to appoint watchmen, who, together with all superintendents, gardeners and agents, stationed on the cemetery grounds, upon taking an oath of office similar to that required of constables, shall exercise all the powers of police officers within and adjacent to said grounds, in the arrest of persons engaged in violating the laws for the protection of cemeteries.]

**328.** Authority is hereby vested in the court of quarter sessions of the several counties of this Commonwealth to make such orders and decrees for the regulation and care of burial-grounds, situated in and adjacent to incorporated boroughs, as the public good shall require; and when any such burial-ground shall become so neglected as, in the opinion of said court, to become a public nuisance, the court may direct the removal of the dead therefrom, by the proper borough authorities, to some other properly regulated burial ground, and may enforce, by proper process, orders and decrees made under this act.

**329.** Upon petition of the managers and officers of any incorporated cemetery company, and a majority of the taxables of the borough to which it is proposed to transfer such cemetery, the said court may authorize the transfer of any cemetery to the borough authorities of any borough in which such cemetery may be located or adjacent thereto; and such transfer shall be made without cost to such borough; and upon such transfer being made, such borough authorities shall hold and exercise the power and privileges of such incorporated company, and may purchase lands within or beyond such borough limits, not to exceed thirty acres, for the extension of such cemetery, if the same be deemed

5 April, 1849.

10 April, 1852. § 5.  
P. L., 657.  
P. D., 229.

Removal of church burial grounds in Philadelphia.

9 April, 1873. § 1.  
P. L., 87.  
P. D., 229.

Powers of watchmen, &c., in cemeteries.

18 May, 1876. § 2.  
P. L., 189.  
P. D., 229.

Jurisdiction of the courts of quarter sessions over burial grounds.

Removal of bodies.

Ibid, § 2.

Transfer of cemeteries to borough authorities.

Such transfer to be made without cost to borough.

all special acts prohibiting the opening of streets, &c., through cemeteries, in cities, were repealed by the act 8 June, 1881, P. L., 68, viz:—"Section 13. The municipal authorities and courts having jurisdiction in any city of this Commonwealth, shall have exclusive control and direction of the opening, widening, narrowing, vacating and changing grades of all streets, alleys and highways within the limits of such city, and may open or widen streets, at such points and of such width, as may be deemed necessary by such city authorities and courts, any private or special statute to the contrary notwithstanding \* \* \* \*."

13 May, 1876.

May alter the original plot of cemetery.

18 April, 1877, § 1.  
P. L., 54.  
P. D., 228.

Courts may order the removal of the bodies of the dead from burial grounds, when needed for buildings for religious purposes.

necessary, and may raise the means by sale of lots or otherwise, but in no event by taxation, to pay for the same, and perform such other duties as may be deemed necessary in the premises; they may lay out the grounds so purchased, and change or alter the original plot of such cemetery, \* \* \* \* in changing or altering the plot of any such cemetery, the dead bodies may be removed and re-interred in a suitable place without cost to surviving friends.\*

**330.** [This act provides that when any burial ground belonging to any religious society or church has ceased to be used for interments, the courts of quarter sessions of the several counties, upon the petition of the managers, &c., of such church, setting forth that the erection or improvement of buildings for religious purposes of such society are interfered with, to the detriment of such society and of the public good, may, after a full hearing of the parties therein, authorize and direct the removal of the remains of the dead from so much of such burial-ground as may be needed for buildings for religious purposes only.]

Such removal to be made by such managers, in a careful manner, to other parts of the same burial-ground, or to some other properly regulated cemetery in the vicinity: *Provided, however,* That before such removal, said managers shall publish, for four consecutive weeks, in two newspapers, a notice of their intention to remove said remains in pursuance of this act: *And provided further.* That friends of such dead may so remove said remains, at any time during said proceedings, before actual removal by said managers.]

The erection of a building for Sunday-school and lecture rooms, is such religious purpose.—*Craig v. Presbn. Church*, 88 Penn. St., 42 (See dissenting opinion of Agnew, C. J.). Otherwise of general buildings.—*Teffreys v. Pittsburgh*, 30 Pitts. Law Jour., 21.

The grant of a burial lot, by certificate, subject to the conditions and regulations contained in the deed to the trustees, conveys no interest in the soil; the bodies interred therein may be removed, under the authority of an act of Assembly, whenever the land ceases to be occupied for such purpose; such act is constitutional.

The disinterment of a body is a misdemeanor at common law. The power of disinterment is a police power and can be delegated by the Legislature to municipalities.—*Kincald's Appeal*, 66 Penn. St., 411. It cannot be considered as established in Pennsylvania that the next of kin are exclusively entitled to decide upon the place of burial of a deceased person; and the remains, if interred by decedent's husband in his burial lot, will not be removed on the application of her relatives, against his will. But a court of equity will regulate such controversies according to the proprieties of the case, as a question of the repose of the dead.—*Gampher v. Poulson*, 19 W. N. C., 230.

12 May, 1887, § 1.  
P. L., 96.  
P. D., 2146.

Courts of quarter sessions authorized to direct the removal of dead bodies from certain burial grounds.

**331.** When by the growth of cities, towns and boroughs, and the opening of incorporated or unincorporated cemeteries in cities and boroughs, or in the vicinity thereof, or from other causes, any burial ground belonging to or in charge of any religious society or church directly, or through trustees thereof, or in the charge of no person, persons, church or society, has

\*This act is supplementary to the act 19 May, 1874, §§ 1, 2, P. L., 208; P. D., 228, but in effect supersedes it.

ceased to be used for interments, or has become so neglected as, in the opinion of the court, to become a public nuisance, or that the remains of bodies interred in any such neglected or disused cemetery in any city or borough interfere with and hinder the improvements, extensions and general progressive interests of any city or borough, the court of quarter sessions of the several counties of this Commonwealth, upon petition of the managers, officers, or on the petition of fifty or more citizens, or residents in the vicinity, in cases where such cemetery or graveyard is not in the charge of any person, persons, church or society, or trustees of such society or church, setting forth that the erection, extension, improvements and general progressive interests of such city or borough are hampered and interfered with and the welfare of such city or borough is injured to the detriment thereof and of the public good, and after three weeks' advertisement of hearing in open court for the purpose, may, after a full hearing of the parties, their proofs and allegations, authorize and direct the removal of the remains of the dead from such burial grounds: *Provided*, That no such application shall be made by the managers, officers or trustees of such society or church, except in pursuance of the wishes of a majority of the members of such society or church expressed at a meeting held for that purpose, after two weeks' public notice.

**332.** Such removal to be made by such managers, officers, or by the authorities of such city or borough, when such burial ground is not in the charge of any person, persons, church or society, trustees of such society or church, or under their direction, in a careful manner, at their own expense, to such other burial ground or grounds they may select for said purpose, or if desired by the relatives or friends of such dead to some properly regulated burial ground or cemetery in the immediate vicinity, and said courts may enforce, by proper process, orders and decrees made under this act: *Provided, however*, That before removing any of said bodies said managers, officers, trustees, city or borough authorities shall publish, for two successive weeks, in two daily or weekly newspapers of such city, borough or county wherein such burial ground is located, a notice declaring their intention to remove said remains in pursuance of this act: *And provided further*, That relatives and friends of such dead shall have the right to so remove said remains at any time during said proceedings at their own expense before actual removal by such managers, officers or trustees: *And it is further provided*, That all bodies, when so removed, shall be placed in separate caskets and graves, and the headstones, monuments or other marks placed by the remains of said bodies shall be taken by the persons authorized to make such removal and placed as near as can be in the same relative position as before removal.

12 May, 1887.

Petition to be presented to the court.

Contents of said petition.

Public notice thereof to be given.

Members of the church or society to authorize the application for order of removal.

Ibid, § 2.

Removals regulated.

Courts may enforce orders and decrees made under this act.

Public notice of removals to be given.

Relatives and friends may remove remains.

Remains to be placed in separate caskets and graves.

23 May, 1897, § 1.  
P. L., 183.

Church officers may  
petition the court  
for leave to abandon  
burying  
ground, &c.

Court to direct  
proper notice to be  
given.

And make decree of  
abandonment, &c.

When bodies to be  
removed, &c., by  
church officers.

Conditions to be  
set forth in the decree  
of court.

Parties interested  
may appeal.

**333.** The trustees, treasurer or other proper officers of any church, congregation, presbytery or other church organization, owning real estate used as a burying ground, may, whenever so desired by a majority vote of such church, congregation or church organization, owner or owners as aforesaid, apply by petition to the court of common pleas of the county, wherein such real estate may be located, for leave to abandon such burying grounds, remove and re-inter the bodies of deceased persons therein buried, and to sell such real estate in fee, clear of all restriction. Upon presentation of such petition the court shall make such order relating to publication and notice to parties in interest as may seem meet and proper, and, after final hearing of all parties in interest, may make such decree relating to the abandonment of such grounds for burial purposes, the removal of bodies therefrom and the sale thereof, as may be just and equitable; and, when no person in interest can be found, said bodies to be removed and *separately* re interred in some suitable burying ground, and *each grave* to be properly marked by head stone, *et cetera*. (provided such grave was so marked before removal), by the trustees, treasurer or other proper officer or officers of the church, congregation, presbytery or other church organization, owning the real estate so used as a burying ground: *Provided*, That no such petition shall be granted except upon condition set forth in the decree, requiring the petitioners to purchase the rights of all lot holders in such burying grounds to secure the consent in writing of the near relatives of decedents, whenever such relatives shall appear as parties to such proceedings: *And provided further*, That any party in interest may appeal from the decree of such court within thirty days.

## XV. EXPLOSIVES.

### Petroleum Oils, Saltpetre, Gunpowder, Nitro-Glycerine, Firearms and Fireworks.

(SEE VIII, 147. OFFENSIVE TRADES.)

16 May, 1874, § 1.  
P. L., 139.  
P. D., 1326.

Test of burning  
fluids.

**334.** No refined petroleum, kerosene, naphtha, benzole, gasoline or any burning fluid, be they designated by whatsoever name, the fire test of which shall be less than one hundred and ten degrees Fahrenheit, shall be sold or offered for sale as an illuminator, for consumption within the limits of the Commonwealth of Pennsylvania.

*Ibid*, § 2.  
Determined by an  
inspector.

**335.** Said fire-test shall be determined by an inspector appointed under the provisions of this act, who shall use Tagliabuie's, or such other well-defined in-

strument as may be used by the inspectors of export oil, according to the following formula: Heat with alcohol small flame; when thermometer indicates ninety degrees, remove lamp; at ninety-five, try for a flash, with small bead of fire on end of string, held within a quarter of an inch of surface of oil; replace lamp, and work oil up gradually from this point until the burning point is reached, removing lamp every four degrees, and allowing oil to run up three degrees, before replacing lamp, flashing oil each time, just before lamp is replaced, until result is attained.

15 May, 1874.  
Formula.

**336.** The said inspector shall be appointed by the courts of common pleas, one in each county in the Commonwealth wherein said burning oils or fluids, as before mentioned, are manufactured: *Provided*, That in any county where there shall be more than one court of common pleas, the said appointments shall be made by court number one in said counties, and in any county wherein is situate a city of more than three hundred thousand inhabitants, in such case, in lieu of court number one, the appointment of inspector shall be made by the mayor of said city.

*Ibid*, § 2.  
Inspectors to be appointed.

**337.** The said inspectors shall hold their office for the term of three years, unless sooner removed by the appointing power, for incompetency, or found guilty under the provisions of this act; vacancies in said office to be filled by the authority in which the appointing power is vested by this section. The said inspectors shall be authorized to appoint such clerks or deputies as they may find requisite for the carrying out of the duties specified under this act; the said clerks and deputies shall be paid out of the fees of the office, by the inspector of the county wherein the service is performed; all clerks and deputies are held answerable by this act, and subject to the same penalties for violating any of its provisions as are provided in this act for the punishment of the appointed inspectors. Each inspector, deputy or clerk, after receiving his appointment, and prior to entering upon the duties of the office for which he is appointed, shall file in the office of the prothonotary of the court of common pleas, an oath or affirmation that he will well and truly perform the duties of his office, and carry out the provisions of this act, and said inspectors shall also file a bond, with one or more approved securities, in style similar to that of the sheriff of the county, in the penal sum of ten thousand dollars, for the faithful performance of the duties of the said inspector's office, as provided in this act. The said inspector is hereby empowered to receive and collect from the manufacturer or owner the sum of twenty cents per package for each package inspected, in any lot under ten; ten cents per package for each package inspected in any lot not more than fifty; seven cents per package for each package inspected in any lot or all lots over fifty; and one dollar for each car of bulk refined

*Ibid*, § 4.  
Term of office.

Inspectors may appoint clerks and deputies.

Oath of office.

Bond.

Fees for inspection.

15 May, 1874.

Inspector to provide stencils,

Powers and duties of Inspector.

oil; and in case any person shall call upon said inspector to inspect one package of refined oil, he shall charge said person for such inspection fifty (50) cents. The said inspector shall provide, at his own cost, stencils for the purpose of branding packages, to read thus: "State of Pennsylvania, fire-test one hundred and ten degrees," with name of inspector: *Provided*. When oil so inspected shall stand higher test, the inspector shall designate such actual test by his brand. The said inspectors or his clerks or deputies, shall and are hereby empowered to enter any place or building where oils or fluids, as before designated in this act, are manufactured, kept in store for sale or consumption, in this Commonwealth, and in such counties wherein oil is sold and not manufactured, for which no inspector has been appointed, or in any other place within the limits of this State, wherein he has reason for believing that oil is being kept or sold contrary to the provisions of this act, or for the purpose of carrying out the true intent and meaning of this act; any inspector shall have the privilege to re-inspect, and is hereby empowered to inspect any oil, as hereinbefore designated in section first, which he may, by any reason, believe to be under fire-test, and if so found by him to be under fire-test and falsely branded, he shall prosecute or cause to be prosecuted the offender, as herein authorized in section four of this act; no charge shall be made for re-inspection.

*Ibid*, § 5.

Penalty.

338. Any person violating any of the provisions of this act shall, upon conviction thereof, be deemed guilty of a misdemeanor, and shall be subject to a fine of not less than two hundred and fifty (\$250) dollars, nor more than five hundred (\$500) dollars, or imprisonment not less than one year, or both, at the discretion of the court; one-half of said fine to go to the prosecutor and one-half to the school fund in the district where such misdemeanor may have been committed. Also, if any person shall sustain damage to his property or injury to his person, by reason of a violation of any of the provisions of this act by another person, the person guilty of said violation shall be liable to the person injured for all damages sustained thereby.

Liability for damages.

*Ibid*, § 6.

When oils to be subject to seizure and sale.

339. All the oils or fluids subject to inspection under this act, that may be found in the hands of those who sell in less quantities than one barrel, with a fraudulent brand or mark of inspection, or found to have been adulterated or not coming up to the fire test, as the mark of inspection would indicate, shall be subject to seizure by the said inspector, and the same shall, after ten days' public notice, be sold solely for re-distillation; the proceeds of such sale, after deducting the necessary expenses of sale and seizure, shall one-half be given to the public school fund wherever the seizure was made, and one-half to the informer.

**340.** Any inspector or deputy appointed under this act, who shall violate any of its provisions, by neglecting to inspect upon request, or shall falsely brand any oil or fluid, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than two hundred and fifty dollars nor more than one thousand dollars, and be subject to imprisonment for not less than three months or more than one year, or both, subject to the discretion of the court; one-half the fine to go to the informer and one-half to the school fund of the district wherein the offence was committed.

15 May, 1874, § 7.

Penalty for breach of official duty.

**341.** Packages containing oil manufactured for export shall be branded with a stencil by the manufacturer with the words "for export;" all benzine, naphtha or any hydro-carbons, created in the manufacture of refined oil from crude petroleum, or otherwise manufactured, shall be inspected and branded "benzine," and shall not be kept for sale or used in any way for giving light to be burned in lamps; and this act shall not be construed to prohibit their use in making gas to be conveyed through pipes to burners similar to gas in city gas-works, to be used for the same purpose: *And further*, The penalties for violating this section shall be the same as applied to the use of refined oil below legal test.

*Ibid*, § 8.

How packages for exportation to be branded.

**342.** Nothing contained in this act shall be construed or held to apply, in any manner, to any kind of oil or fluid manufactured for export from this State, or in transit from one State to another through the limits of this Commonwealth.

*Ibid*, § 9.

Not to apply to oils manufactured for exportation.

**343.** Any person or persons who shall sell or cause to be sold any barrel or package, or who shall refill the same without first removing the brand of the inspector, shall be liable to a fine of three hundred dollars for every barrel or package sold or delivered or refilled; said fines shall be recoverable as other fines of like character are recoverable by law; and one-half shall go to the informer, and one-half to the school fund of the district in which the offence was committed.

*Ibid*, § 10.

**344.** No petroleum, benzine, benzole, or naphtha shall be refined or manufactured within the city of Philadelphia, on the eastern side of the river Schuylkill, between Allegheny avenue and Mifflin street, excepting thereout the area southward of Washington street, and between the river Schuylkill and Thirtieth street, or on the western side of the river Schuylkill, south of Girard avenue and east of Forty-third street; nor shall the same be kept stored in any building or other premises, within such limits, in any greater quantity, at any one time, than twenty-five barrels of refined petroleum, and one barrel of crude petroleum, one barrel of benzine, benzole, or naphtha, respectively; the said barrels to be kept or stored in buildings with cellars of sufficient depth, or in premises properly excavated or embanked, to prevent any overflow of the

2 March, 1885, § 1.  
F. L., 252.  
B. F. D., 535.

Storage of certain explosives regulated in Philadelphia.

Limits specified.

Suitable store-houses.



2 March, 1865.

fluids therefrom, under forfeiture, as hereinafter directed, of the entire quantity of each and all of the said articles of merchandise, that shall be so refined, kept, or stored, contrary to the restrictions of this act.

Nothing herein contained shall prevent the refining, storing, or depositing of crude or refined petroleum, or coal oil, on the west side of the Schuylkill, east of Thirtieth street, between Bridge street and Arch street, and between Chestnut street and South street, on premises with sufficient excavations or embankments to prevent the overflow or escape of the oil so refined, stored, or deposited, in case of fire or accident.

No refining of petroleum, benzine, benzole, or naphtha shall be carried on within five hundred feet of the east or west side of the river Schuylkill, within the said city, north of the line of Girard avenue.\*

License required ;  
to be obtained from  
the mayor on certi-  
ficates from fire-  
marshal.

It shall not be lawful to keep or store the said quantities of refined petroleum, crude petroleum, benzine, benzole, or naphtha, within the designated limits, without license therefor first had from the mayor of the city of Philadelphia, upon due certificate, to be given by the fire marshal of the said city, that the cellar, excavation, or premises, in which storage, as aforesaid, shall be authorized, will afford reasonable security from special danger, in case of accidents or fire, for which license the sum of ten dollars shall be paid to the city treasury; and such license to be renewed for each calendar year, upon annual payment as aforesaid \* \* \*.

Ibid, § 2.

Cannot be refined  
or stored within  
one hundred feet  
of any dwelling  
without the con-  
sent of the owner  
thereof.

**345.** It shall be lawful to refine, manufacture, store, and keep petroleum, benzine, benzole, and naphtha in such quantities as may be desired, in those portions of the city of Philadelphia, east and west of the river Schuylkill, not included within the limits designated in the first section of this act, for prohibiting therefrom: *Provided*, That the same be at least one hundred feet distant from any dwelling, without the written consent of the owner thereof: *And provided further*, That a license be first had from the mayor of the city of Philadelphia, for which ten dollars shall be paid into the city treasury, and likewise, for the annual renewal thereof, after certificate, to be given by the fire marshal of the said city, upon actual survey and inspection of the building or premises in which said commodities shall be refined, kept, or stored, or are designated so to be, that the said building or premises have suitable tanks, cellars, excavations, or embankments, to prevent the overflow or escape of petroleum and like commodities in the event of accident or fire; which certificate of survey and inspection shall be returned to the mayor; whereupon, if the same be approved by him, he shall issue his license in accordance with the provisions of this act.

License.

\* But by act 24 March, 1865, § 2, P. L., 749, this does not apply to the Belmont petroleum works, located on the river road, above the Columbia bridge, in the Twenty-fourth ward.

**346.** Whenever any inhabitant of the said city shall make oath or affirmation, before the mayor of the city of Philadelphia, which shall afford probable cause to believe that any petroleum, benzine, benzole, or naphtha is improperly stored, kept, or refined, contrary to the provisions of this act, it shall be lawful for the said mayor to issue his warrant or warrants to any police officer of the said city, or other fit persons, commanding him or them to search for such petroleum, benzine, benzole, or naphtha, wherever the same may be in violation of the provisions of this act, and if found, to seize and take possession of the same, and cause the same to be removed to such safe place as the mayor shall thereupon designate in writing.

<sup>2</sup> March, 1865, § 3.

Seizure of petroleum, &c., refined or stored contrary to act.

**347.** All persons refining, or manufacturing, depositing or storing petroleum, or coal oil, benzine, benzole or naphtha, on the west side of the river Schuylkill, east of Thirtieth street, between Arch street and Bridge street, and between Chestnut street and South street, as authorized by the act to which this is a supplement, \* shall, besides having on their premises suitable tanks, excavations or embankments to prevent the overflow, or escape of the oil so refined, stored or deposited, be required to obtain a license from the mayor of the city of Philadelphia, for which the sum of ten dollars shall be paid into the city treasury and likewise for the annual renewal thereof, upon due certificate to be given by the fire marshal, and approved by the mayor of said city, that such premises are so constructed and arranged as to afford reasonable security from danger, in case of accident or fire.

24 March, 1865, § 1.  
P. L., 740.  
B. P. D., 887.

**348.** So much of the first section of the act to which this is supplementary, \* as prohibits the refining of petroleum, benzine, benzole or naphtha within five hundred feet of the east or west side of the river Schuylkill, shall not be construed to apply to the Belmont petroleum works, located on the river road above the Columbia bridge, in the Twenty-fourth ward of the city of Philadelphia.

Ibid, § 2.

**349.** It shall be lawful to refine, manufacture, store and keep petroleum, benzine, benzole and naphtha in such quantities as may be desired, in that portion of the said city of Philadelphia lying south of Dickerson street, and east of Otsego street, subject to all the provisions and restrictions of the second section of the act to which this is a supplement.

Ibid, § 3.

**350.** The fire marshal shall be entitled to charge, demand, and receive, for his own use, from each applicant for examination of the premises and license under this act, and the act to which this is a supplement, before such examination is made, the following fees, to wit: For every examination of a storage depot, where the quantity allowed by law shall not exceed twenty-five barrels, and for every refinery or manu-

Ibid, § 4.

\* i. e. Act 2 March, 1865, P. L., 262, above, § 14.

23 May, 1871, § 1.  
P. L., 1063.  
B. P. D., 886.

factory the sum of ten dollars; for all other examinations required by law, the sum of five dollars.

**351.** The boundaries for the manufacture and the storage of petroleum, benzine, benzole or naphtha be and are hereby extended north to Moore street, between Twenty-fourth street and Twenty-fifth street, in the Twenty-sixth ward, of the city of Philadelphia.

The manufacturer of a dangerous explosive oil, who sells it for illuminating purposes, is responsible to a person injured, though it has passed through the hands of a number of intervening purchasers, if its identity be established.—*Elkins v. McKean*, 79 Penn. St., 493.

The keeping of turpentine and benzine upon the premises, for sale, in violation of the conditions of a policy of insurance, renders it void; though it be the custom to keep it in simple country stores, as part of the ordinary stock of merchandise—*Lancaster Fire Insurance Co. v. Lenheim*, 89 Penn. St., 497. A clause prohibiting the keeping or having upon the insured premises of any petroleum, benzine, camphene, etc., is not violated by the use of benzine, with due precaution, for the purpose of cleaning machinery; it refers to a permanent or habitual storage.—*Mears v. Humboldt Ins. Co.*, 92 Penn. St., 15. Keeping petroleum on the premises as fuel will vitiate a policy prohibiting it except for lights.—*White v. Assurance Co.*, 18 W. N. C., 279.

### Saltpetre.

8 April, 1851, § 12.  
P. L., 384.  
B. P. D., 913.

Storage of salt-  
petre in buildings,  
or ships lying at  
the wharf.

Penalty.

Larger quantities  
may be stored in  
forwarding houses  
for forty-eight  
hours.

*Ibid*, § 13.

Right of search for  
saltpetre unlaw-  
fully stored.

**352.** It shall not be lawful for any person to store, or deposit, or keep in any warehouse, store, cellar, or other place within the limits of the city of Philadelphia, or the incorporated districts of the county of Philadelphia, or in any ship, vessel, or other craft lying at or made fast to any wharf in front of said city or incorporated districts, any greater quantity of saltpetre at any one time than three kegs or three hundred pounds; and any person or persons who shall store, or deposit, or keep any saltpetre in violation of this act shall forfeit and pay for each and every offense the sum of one hundred dollars, to be recovered as debts of like amount are by law recoverable; one-half of said sum to be paid to the informer, and the other half to the use of the guardians of the poor of the Blockley almshouse; and the whole quantity of saltpetre so stored, deposited, or kept, over and above the quantity of one hundred pounds as above named, shall be forfeited to the use of the informer: *Provided*, That nothing herein contained shall be so construed as to affect the reception and storage in any forwarding house located in said city or county, for a period not exceeding forty-eight hours, such quantity or quantities as may be offered and intended for transportation over any of the public works of the Commonwealth.

**353.** If any person shall appear before the mayor of the city of Philadelphia, or before any alderman in said city or county, and shall upon oath or affirmation declare that there is reason to believe that there is a greater quantity of saltpetre than is authorized by the foregoing section of this act stored, deposited, or kept in any warehouse, store, cellar, shop or other place within the limits of said district, or in any ship, vessel

or other craft lying at or near any wharf in front of said city or district, it shall be the duty of said magistrate to issue his warrant under his hand and seal commanding any constable or police officer for the time being to search in the daytime for saltpetre forbidden by this act, and for that purpose, if necessary, shall break open and enter by forcible means all such places in which it shall be alleged upon the oath or affirmation of said informant saltpetre is kept in violation of this act, and said officer shall seize and remove the same beyond the limits of said city and districts, and sell the same at public sale or vendue, and after paying the expenses necessarily incurred in carrying this act into effect, shall pay the remainder of the proceeds of said sale into the hands of said informer, and said officer or informer shall not be sued for entering said property, nor for seizing, removing, detaining, or selling said saltpetre, nor shall any writ of replevin issue therefor, but all writs, actions, or cause of actions that may be brought against said officer or informer are hereby declared illegal and abated.

8 April, 1851.

Saltpetre so seized to be sold at public sale.

**354.** So much of the act entitled "An act to incorporate the Towanda and Burlington plank-road company," and for other purposes, as relates to the storage of saltpetre, shall not be construed as to prohibit or in anywise obstruct the landing of saltpetre from any vessel at the port of Philadelphia, and its temporary storage in any outhouse or building for the purpose of facilitating the landing thereof, or the exportation or transshipment of the same; nor shall it be so construed as to prohibit the storage or deposit of saltpetre by any person in any building which may stand fifty feet distant from any other building owned or occupied by any other person or persons; and it shall and may be lawful to deposit and keep saltpetre in any cellar in the city of Philadelphia or incorporated districts of the county: *Provided*, There shall not be any sugar, molasses, rosin, pitch, tar, turpentine, sulphur, lard, butter, linseed oil, whale or olive oil stored in the same building at the same time.

14 April, 1851, § 9.  
P. L., 139.  
B. P. D., 914.

Landing of saltpetre at Philadelphia and its temporary storage not prohibited.

**355.** All and singular the provisions of this act relative to the recovery of any penalty, and the seizure and forfeiture of gunpowder or gun-cotton, \* be and they are hereby extended to the recovery of any penalty, and the seizure and forfeiture of all saltpetre introduced, stored, deposited, or kept in said city, in violation of the acts relative thereto now in force in said city, and the said penalty and forfeiture shall be to and for the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen, against whom all suits or actions for its recovery shall be brought in accordance with the provisions of this act.

20 March, 1850, § 9.  
P. L., 139.  
B. P. D., 914.

Provisions of this act relative to gunpowder extended to saltpetre.

\* See below, 372.

## Gunpowder.

28 March, 1787, § 2.  
2 Sm., 402.  
B. F. D., 728.

Gunpowder  
brought in ships to  
be delivered at the  
magazine within  
forty-eight hours.

Penalty, the for-  
feiture of part of  
the powder.

Measures taken to  
inform strangers  
of this act.

Ibid, § 4.  
W. D., 464.

Gunpowder not to  
be delivered on  
board vessels while  
lying at wharves.

To be conveyed to  
vessels in boats.

Penalties.

Ibid, § 5.

Gunpowder  
brought by land  
subject to same  
regulations.

**356.** Every captain or master of, or merchant own-  
ing, any ship or vessel, bringing therein into such part  
of the port of Philadelphia, as lies between the south-  
ern boundary of the district of Southwark and the  
north-eastern boundary of the township of the North-  
ern Liberties, any gunpowder, for sale or other purpose,  
shall, within the space of forty-eight hours from the ar-  
rival and coming to anchor of said ship or vessel, within  
the limits aforesaid, and before such ship or vessel shall  
be brought to any wharf of the said port, within the  
said limits, deliver, or cause to be delivered, all the  
gunpowder above thirty pounds weight, brought as  
aforesaid, at the magazine, under the penalty of for-  
feiting at and after the rate of twenty pounds for every  
cask of gunpowder so withheld and not delivered as  
aforesaid, together with the whole of such gunpowder  
above the said thirty pound weight, if such gunpowder  
be the property of the offender; and in order that stran-  
gers may be the better apprised of the tenor of this act,  
the health officer and his deputies are required and en-  
joined, as soon as they have opportunity, to give infor-  
mation thereof to such captain, master or merchant;  
and the custom house and naval officers, and their dep-  
uties, are required and enjoined to give such infor-  
mation to the captains or other persons coming to their  
several offices, to make entry or report of their arrival,  
or of their cargoes.

**357.** If any gunpowder stored in the magazine be  
intended for exportation, it shall not be delivered on  
board of the vessel intended to export the same, while  
she remains at any of the wharves in such part of the  
city of Philadelphia, but after removal of any such gun-  
powder, for the purpose aforesaid, from the said maga-  
zine, it shall be immediately delivered into some boat  
or craft, to be used for conveying it on board of such  
vessel, and which boat or craft shall be ready to re-  
ceive and convey the same to such vessel, and shall  
forthwith carry it on board thereof, under penalty of  
forfeitures of such gunpowder, and of the sum of twenty  
pounds, to be paid by any person so offending, and of  
the further sum of fifteen pounds for every hour such  
boat or craft shall remain at any such wharf, after tak-  
ing or receiving such gunpowder on board; and such  
gunpowder shall not be unloaded from any cart, dray,  
or other carriage, on any wharf within the said city and  
the aforesaid adjacent country, until the boat or craft  
into which it is to be delivered, for the purpose of con-  
veying it to the vessel intended to export the same,  
shall be ready to receive it, under the penalty of twenty  
pounds, to be forfeited by every person so offending.

**358.** All gunpowder brought by land into the said  
city or adjacent country, within two miles of said city,  
if above thirty pounds weight at one time, shall be im-  
mediately carried to the magazine, and delivered to the

superintendent thereof, or his deputy, within the hours hereinafter prescribed for his attendance at the said magazine, under the same penalties as if brought by water, and not delivered, as in such case is herein directed. at the said magazine.

It shall not be lawful for any person or persons to import or introduce gunpowder within the following limits, excepting as hereinafter directed; that is to say, no vessel having a greater quantity than five kegs of gunpowder shall be permitted to anchor north of the pier next above the Pointhouse, on the river Delaware, in the township of Moyamensing and county of Philadelphia.

**359.** No person shall convey in any dray, cart, wagon, or other carriage, any greater quantity of gunpowder than thirty pounds weight, in or through the said city, or the adjacent country, within two miles of said city, without securing it in a good bag or bags, or putting a sheet of canvass under and around the said powder, sufficient to prevent the same from scattering from the said carriage, under the penalty of forfeiture of the said gunpowder, and, for every such offense, the sum of twenty pounds, to be paid by every person so offending.

Under this act musket and cannon cartridges are liable to seizure if conveyed through the streets of Philadelphia without being secured as the act directs; but they cannot be seized after being lodged in the magazine.—*Shewell v. Gunpowder*, 1 Bro., 116. The omission of the shipper of a dangerous article (aquafortis) to give notice of its nature to the carrier, is an act of negligence, which renders the shipper liable for the consequences.—*Stacy v. Wetherill*, 7 Haz. Pa. Reg., 92.

**360.** It shall not be lawful for any person or persons to import or introduce gunpowder within the following limits, excepting as hereinafter directed; that is to say, no vessel having a greater quantity than five kegs of gunpowder shall be permitted to anchor north of the pier next above the Pointhouse, on the river Delaware, in the township of Moyamensing and county of Philadelphia, and all gunpowder brought up the Delaware shall be landed at the aforesaid pier, and when the same is intended to be conveyed to the United States arsenal or the State magazine, the same shall be transported by the most convenient route not approaching nearer to the city than as follows.† \* \* \* \*

**361.** No greater quantity of gunpowder than three kegs, containing twenty-five pounds each, shall be landed from or shipped on board any vessel lying in the river Delaware, between the before-mentioned pier and Conroe & Co.'s wharf aforesaid.

**362.** For the purpose of supplying retailers of gunpowder within the city of Philadelphia, or within the limits hereinafter marked out and prescribed, it shall and may be lawful to introduce the same in kegs, con-

28 March, 1787.

*Ibid*, § 6.

Gunpowder taken through or near Philadelphia to be secured in bags.

March 14, 1818, § 1.  
7 Sm., 83.  
B. P. D., 729.

Where gunpowder may be landed.

14 March, 1818, § 5.  
7 Sm., 83.  
B. C. D., 730.

*Ibid*, § 6.

†The remainder of this section and the second, third and fourth sections prescribe the route for the transportation of gunpowder through the city.

14 March, 1818.

taining twenty-five pounds each, made and secured as directed by the act to which this is a supplement,\* carefully enclosed in sound, strong woolen or leather bags, and laid in a close-bodied carriage, covered with painted canvas.

16 March, 1847, § 1.

P. L., 473.

W. D., 463.

Gun-cotton placed under same regulations as gunpowder.

**363.** No gun cotton shall be introduced into Philadelphia, nor placed in storage therein, in greater bulk or quantity in any one place, than is permitted by existing laws with regard to gunpowder; and all the pains, penalties and forfeitures imposed by an act entitled "An act for securing the city of Philadelphia, and the neighborhood thereof, from damage by gunpowder," passed on the 28th day of March, 1787, and a supplement thereto, passed on the 14th day of March, 1818, shall apply and be extended to gun-cotton, in the same manner and with the same effect as if the word gun-cotton were inserted in the said act.

11 April, 1848, § 2.

P. L., 508.

B. P. D., 780.

Not more than fifteen kegs of gunpowder to be taken into Philadelphia in one load.

**364.** It shall and may be lawful for any one to introduce into the city and county of Philadelphia, from the State powder magazine, in any one carriage at any one time, any number of kegs of gunpowder not exceeding fifteen of said kegs, to be immediately distributed for the supply of retailers. (The act of March 14, 1818, § 7, prescribes the penalty.)

22 April, 1850, § 2.

P. L., 580.

P. D., 1440.

Gunpowder not to be transported unless so marked.

**365.** It shall be unlawful for any person to transport gunpowder over any railroad, canal or slack-water in this Commonwealth, unless the keg, barrel or other vessel containing the same shall be distinctly and conspicuously marked, by having the word "gunpowder" written or printed thereon; and every violation of this section shall subject the person or persons so offending to be prosecuted by indictment in the court of quarter sessions of the proper county, and punished by fine not exceeding five hundred dollars, and imprisonment not exceeding six months, or either of them, at the discretion of the court. See 23 May, 1878, § 1, P. L., 102. *infra*.

3 April, 1851, § 2.

P. L., 320.

P. D., 204.

Powers of boroughs in regulating manufacture and sale of explosives.

**366.** Every borough within this Commonwealth shall have power (vested in the corporate officers designated in the charter) to prohibit within the borough the carrying on of any manufacture, art, trade or business which may be noxious or offensive to the inhabitants; the manufacture, sale or exposure of fire-works or other inflammable or dangerous articles, and to limit and prescribe the quantities that may be kept in one place of gunpowder, fireworks, turpentine and other inflammable articles, and to prescribe such other safe-guards as may be necessary.

20 March, 1856, § 1.

P. L., 17.

P. D., 863.

Storage of gunpowder, &c., in Philadelphia regulated.

**367.** It shall not be lawful for any person or persons to have or keep any quantity of gunpowder or gun-cotton in any house, store, shop, building, cellar or other place within the city of Philadelphia (except in the public magazines, or in a quantity not exceeding two

\*Act 28 March, 1787, § 6, above, 339.

pounds for private use), unless in the manner hereafter provided.

**368.** It shall be lawful for the mayor of the city of Philadelphia to grant licenses, under the official seal of said city, to any person or persons desirous to sell gunpowder or gun-cotton therein. The person or persons so licensed may have on their premises a quantity of gunpowder or cotton not exceeding in all twenty-five pounds at any one time. The person or persons so licensed shall not be protected against any of the penalties or consequences hereinafter provided for violations of this act, except while they have, on some conspicuous part of the front of each of the houses or buildings in which they may be licensed to sell gunpowder or gun-cotton under this act, a sign on which shall be distinctly painted in letters legible to persons passing such houses or buildings, the words, "licensed to sell gunpowder," or "licensed to sell gun-cotton," and shall pay into the city treasury the sum of five dollars for said license.

20 March, 1886, § 2.

Mayor to grant licenses.

Not more than twenty-five pounds to be kept.

Sign of "licensed to sell gunpowder" to be put up.

Price of license.

**369.** Every carriage used for conveying gunpowder or gun-cotton within the city of Philadelphia, in accordance with the provisions of the acts now in force relative thereto, shall, in addition to the requirements therein contained, have painted on each side thereof, in letters distinctly legible to all passers-by, the word "gunpowder," and any failure so to do shall subject the offender or offenders to the penalties herein contained for violations of this act.

Ibid, § 3.

Carriages for conveyance of, to be marked "gunpowder."

**370.** In every case of a violation of any provision of this act, relative to the keeping of gunpowder or gun-cotton, or in every case of the violation of any of the provisions of the acts now in force relative to the introduction into the city of Philadelphia of gunpowder or gun-cotton, it shall be lawful for any of the trustees of the Philadelphia Association for the Relief of Disabled Firemen, to seize such gunpowder or gun-cotton, in the day-time, and to convey, or cause the same to be conveyed, to any magazine used for the storing of gunpowder.

Ibid, § 4.

On violation, subject to seizure.

**371.** Whenever any inhabitant of the said city shall make oath or affirmation, particularly describing as nearly as may be the place to be searched, and the things to be seized, before the mayor or any alderman, of any fact or circumstance, which, in the opinion of the said mayor or aldermen, shall afford a probable cause of belief that any gunpowder or gun-cotton has been brought into, or is kept within the said city, or in the harbor thereof, contrary to the provisions of this act, or any of the provisions of the acts now in force relative to the introduction of gunpowder or gun-cotton into the city of Philadelphia, it shall be lawful for the said mayor or alderman to issue his warrant or warrants, under his hand and seal, to any sheriff, marshal, constable, or other fit person, commanding him or

Ibid, § 5.

When search warrants may be issued.



20 March, 1866.

them to search for such gunpowder or gun-cotton, in the day-time, wheresoever the same may be in violation of said acts, and to seize and take possession of the same, if found, and to convey, or cause the same to be conveyed, forthwith, to any magazine used for storing gunpowder.

*Ibid*, § 6.

How suits to be brought by owners.

**372.** All actions or suits for the recovery of any gunpowder or gun-cotton, which may have been seized and stored in any magazine by virtue of the provisions of this act, or for the value thereof, or for damages sustained by the seizure or detention thereof, shall be brought against the Philadelphia Association for the Relief of Disabled Firemen, and shall be commenced within three calendar months next after such seizure shall have been actually made; and in case no such action or suit shall have been commenced within such period, such gunpowder or gun-cotton shall be deemed absolutely forfeited to the said Philadelphia Association for the Relief of Disabled Firemen, and may be immediately delivered to the proper officers thereof for its use. No penal damages shall be recovered in any such action or suit; and such gunpowder or gun-cotton may, at any time during the pendency of any such action or suit, by consent of the parties thereto, be sold, and the money arising from such sale be paid into the court where such suit or action may be pending, to abide the event thereof.

When gunpowder to be forfeited.

*Ibid*, § 7.

When firemen may seize without warrant.

**373.** If any gunpowder or gun-cotton, exceeding the quantity mentioned in this act, shall be found in the possession or custody of any person or persons, in violation of the provisions herein contained, by any fireman of any company belonging to the fire department of the said city during any fire therein, it shall be lawful for such fireman to seize the same, without any warrant, and to immediately convey the same, and report such seizure to the chief engineer of the fire department, or in his absence the acting assistant engineer; and the said chief engineer or assistant shall convey, or cause it to be conveyed, to any magazine for the storing of gunpowder, there to be detained until it be decided by due course of law, in accordance with the provisions of this act, whether such gunpowder or gun-cotton be forfeited.

*Ibid*, § 8.

Penalty for violations of this act.

**374.** Any violation of the provisions of this act relative to the keeping of gunpowder or gun-cotton, or of any of the provisions of the acts now in force relative to the introduction of gunpowder or gun-cotton into the city of Philadelphia, shall, in addition to the forfeiture of the gunpowder or gun-cotton as hereinbefore provided, also subject the offender or offenders to a fine of five hundred dollars for each offense, to be recovered, with costs of suit, in an action of debt in any court having cognizance thereof, by, to and for the use of the Philadelphia Association for the Relief of Disabled Firemen. And all gunpowder or gun-cotton found

How recoverable.

within the city of Philadelphia, in violation of the provisions in this act contained, shall be forfeited to the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen.

**375.** All and singular the provisions of this act relative to the recovery of any penalty, and the seizure and forfeiture of gunpowder or gun cotton, be and they are hereby extended to the recovery of any penalty, and the seizure and forfeiture of all saltpetre introduced, stored, deposited or kept in said city, in violation of the acts relative thereto, now in force in said city; and the said penalty and forfeiture shall be to and for the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen, against whom all suits or actions for its recovery shall be brought, in accordance with the provisions of this act.

**376.** All actions for any penalty incurred for violation of any of the provisions of this act, or of any of the acts now in force relative to the introducing, keeping, storing or depositing of gunpowder, gun-cotton or saltpetre within the city of Philadelphia, shall be commenced within one year next after incurring such penalty.\*

The erection of a powder magazine, in an improving neighborhood, though not within half a mile of the buildings then erected, is a nuisance.—Weir's Appeal, 74 Penn. St., 230. Under what circumstances the erection and maintenance of a powder magazine will not be enjoined; the use of gunpowder is an indispensable necessity in many branches of business.—Dilworth's Appeal, 91 Penn. St., 247.

### Nitro-Glycerine.

**377.** If any person shall enter into or upon any railroad train, locomotive, tender or car thereof, or into or upon any stage-coach, or other conveyance used for the carrying of freight or passengers, having in his custody, or about his person, any nitro glycerine or torpedo, or shall carry or cause to be carried, other than as freight regularly shipped as such, such substance, material or device, upon such train, locomotive, tender, car, coach or other conveyance, such person shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding five hundred dollars, and to undergo an imprisonment not exceeding three months, or either, in the discretion of the court.

**378.** The conductor or persons having charge and control of any railroad train, coach or other conveyance for the carriage of freight or passengers, shall have power to arrest any party or parties, or person or persons, found violating the provisions of the first section

20 March, 1856.

Ibid, § 9.  
P. D., 384.

Extended to saltpetre.

Ibid, § 10.  
Limitation of suits for penalties.

23 May, 1878, § 1.  
P. L., 102.  
P. D., 423.

Ibid, § 2.  
Powers of conductor, &c., to arrest.

\*The act 5 May, 1864, § 1, P. L., 841, fixes the rates to be paid for storing all powder or fixed ammunition in the State powder magazine at Philadelphia.

23 May, 1873.

Offenders may be prosecuted in any county through which conveyance passes.

hereof, and to detain such party or person until reaching some place where such person or persons may be delivered to a constable or other police authority, to be taken before any magistrate having jurisdiction of criminal matters, there to be proceeded against by information, as in other criminal cases; and it shall be lawful to prosecute such offenders in any county through which said public conveyance passes, without reference to the place where such offenders were arrested.

### Firearms and Fireworks.

26 August, 1731, § 4,  
1 Sm., 129.  
B. P. D., 725.

Regulation of use and sale of firearms and fireworks.

**379.** If any person or persons, of what sex, age, degree, or quality soever, from and after publication hereof, shall fire any gun or other firearms, or shall make or cause to be made, or sell or utter, or offer or expose to sale, any squibs, rockets, or other fireworks, or shall cast, throw or fire any squibs, rockets or other fireworks, within the city of Philadelphia, without the Governor's special license for the same, of which license due notice shall first be given to the mayor of said city, such person or persons so offending, and being thereof convicted before any one justice of the peace of the said city, either by confession of the party so offending, or by the view of any of the said justices, or by the oath or affirmation of one or more witnesses, shall, for every such offense, forfeit and pay the sum of five shillings; one-half to the use of the poor of the said city, and the other half to the use of him or them who shall prosecute and cause such offender to be as afore said convicted; which forfeitures shall be levied by distress and sale of the offender's goods as aforesaid; and for want of such distress, if the offender refuse to pay the said forfeiture, he shall be committed to prison for every such offense the space of two days without bail or mainprise: *Provided*, That such conviction be made within ten days after such offense committed.

This act is not obsolete.—*Homer v. Cwlth.*, 15 W. N. C., 337. It was held not to have been violated by the firing of a cannon on the 4th of July.—*Eiffenbaugh v. Agnew*, 12 Haz. Pa. Reg., 247.

24 Dec. 1774, § 1.  
1 Sm., 421.  
P. D., 815.

Wanton discharge of firearms or fireworks on or about January 1, prohibited.

**380.** If any person or persons shall on the thirty-first day of December, or the first or second day of January, in every year, wantonly, and without reasonable occasion, discharge and fire off any hand-gun, pistol or other fire arms, or shall cast, throw, or fire any squibs, rockets, or other fire-works, within the inhabited parts of this province, to the disturbance of any of his majesty's subjects there inhabiting and being, every such person so offending, and being thereof convicted before any one justice of the peace of the county, or mayor or other head officer, or justice of the peace of any city or town corporate, where such offense shall be committed, either by confession of the party so offending, or the oath or affirmation of one or more credible witnesses (which oath or affirmation the said justice or

other officer aforesaid is hereby empowered and required to administer), shall, for every such offense, forfeit for the use of the poor of the township or district where such offender lives, the sum of ten shillings, to be levied by distress and sale of the offender's goods and chattels, by warrant, under the hand and seal of the justice or other officer before whom such offenders shall be convicted, returning the overplus, if any, to the owner, the reasonable charge of distraining being first deducted; and for want of such distress such offender shall be committed to prison for the space of five days, without bail or mainprise.

24 December, 1774.

Penalty.

Fine of ten shillings or imprisonment.

**381.** If any person or persons shall willingly permit or suffer, within the time aforesaid, any person or persons to discharge or fire off at his or her house any hand-gun, pistol or other fire-arms, or to cast, throw or fire any squibs, rockets or other fire-works as aforesaid, every person so as aforesaid offending, and being thereof convicted in manner aforesaid, shall, for every such offense, forfeit and pay, for the use aforesaid, the sum of twenty shillings, to be recovered in manner aforesaid.

Ibid, § 2.

Persons not to permit others to violate the act at their houses.

**382.** The constable of each respective city, borough, township, or place in every county of this province, having any knowledge of any offenses against this act, shall, and he is hereby required, under the penalty of twenty shillings, to present on oath or affirmation every such offense to one of the next justices of the peace of their respective counties, or before the justices of the general quarter sessions of the peace for the said county, together with the name or names of all such offenders, that they may be tried agreeably to the directions of this act.

Ibid, § 2.

Duty of constable.

**383.** If any person shall conceive him or herself aggrieved by the judgment of any such justice, he or she may appeal to the next county court of quarter sessions of the said county, who shall, on the petition of the party, take such order therein as to them shall appear just and reasonable, and the same shall be conclusive to all parties.

Ibid, § 4.

Right of appeal to county court.

**384.** No person or persons shall be prosecuted or troubled for an offense against this act, unless the same be prosecuted within four months after the offense committed.

Ibid, § 5.

Prosecution must be within four months.

An ordinance prohibiting the firing of guns within a municipality is not violated by a firing for the protection of life, person, or property.—*Lancaster v. Baer*, 5 Lancaster Bar, 6 Dec., 1873.

**385.** It shall not be lawful for any person, or association, or corporation to manufacture any species of pyrotechnic, or fireworks, cartridges, nor any kind of fixed ammunition in the built up portion of the city of Philadelphia.

23 March, 1865, § P. L., 744. B. P. D., 725.

12 March, 1866, § 1.  
P. L., 180.  
P. D., 884.

Penalty.

How recoverable.

10 June, 1881, § 1.  
P. L., 111.  
P. D., 422.

Sale of toy deadly  
weapons and ex-  
plosives to chil-  
dren.

11 June, 1885, § 1.  
P. L., 111.  
P. D., 2210.

Manufacture and  
sale of toy deadly  
weapons, declared  
a misdemeanor.

Penalty for viola-  
tion of act.

**386.** Any violation of the provisions of an act, approved the 16th day of February, A. D. 1865, entitled "An act relative to the manufacture of fireworks in the city of Philadelphia," shall subject the offender or offenders to a fine of fifty dollars for each offense, to be recovered, with costs of suit, in an action of debt, before any magistrate, or in any court having cognizance thereof, by, to and for the use of the Philadelphia Association for the Relief of Disabled Firemen.

**387.** Any person who shall knowingly and wilfully sell or cause to be sold, to any person under sixteen years of age, any cannon, revolver, pistol or other such deadly weapon, or who shall knowingly and wilfully sell or cause to be sold, to any such minor, any imitation or toy cannon, revolver or pistol so made, constructed or arranged as to be capable of being loaded with gunpowder, or other explosive substance, cartridges, shot, slugs or balls, and being exploded, fired off and discharged, and thereby become a dangerous or deadly weapon, or who shall knowingly and wilfully sell or cause to be sold to any such minor any cartridge, gunpowder or other dangerous and explosive substance, shall, in every such case, be guilty of a misdemeanor, and upon conviction thereof shall be sentenced to pay a fine not exceeding three hundred dollars.

**388.** Any person or persons who shall knowingly and wilfully make, manufacture and sell, or cause to be made, manufactured or sold, any toy cannon, gun, pistol, revolver or other such deadly weapon, or who shall knowingly or wilfully expose to sale any such weapon made elsewhere and brought within the State, shall be guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding five hundred dollars, or suffer imprisonment for a term not exceeding one year, or both, or either, at the discretion of the court: *Provided*, This act shall not interfere with the manufacture and sale of legitimate fire-arms.

## XVI. HEALTH AND SAFETY OF EMPLOYEES AND CHILDREN.

### Fire Escapes.

3 June, 1885, § 1.  
P. L., 68.  
P. D., 2306.  
Fire-escapes.

**389.** All the following-described buildings within this Commonwealth, to-wit: Every building used as a seminary, college, academy, hospital, asylum, or hotel for the accommodation of the public, every storehouse, factory, manufactory or workshop of any kind in which employés or operatives are usually employed at work in the third or any higher story, every tenement house or building in which rooms or floors are usually let to

lodgers or families, every public hall or place of amusement, every parochial or public school building, when any of such buildings are three or more stories in height, shall be provided with a permanent safe external means of escape therefrom, in case of fire, independent of all internal stairways; the number and location of such escapes to be governed by the size of the building, and the number of its inmates, and arranged in such a way as to make them readily accessible, safe and adequate for the escape of said inmates. Such escapes to consist of outside, open, iron stairway, of not more than forty-five degrees slant, with steps not less than six inches in width and twenty-four inches in length. And all of said buildings capable of accommodating from one hundred to five hundred or more persons as operatives, guests or inmates, shall be provided with two such stairways, and more than two stairways, if such be necessary to secure the speedy and safe escape of said inmates, in case the internal stairways are cut off by fire or smoke. And it shall be the duty of the owner or owners in fee or for life, of every such building, and of the trustee or trustees of every estate, association, society, college, seminary, academy, hospital, or asylum, owning or using any such building, and of the board of education or board of school directors having charge of any such school building, to provide and cause to be securely affixed outside of every such building such permanent external unenclosed fire escape: *Provided*, That nothing herein contained shall prohibit any person whose duty it is under this act to erect fire escapes, from selecting and erecting any other and different device, design or instrument, being a permanent safe external means of escape, subject to the inspection and approval of the constituted authorities for that purpose.

This act is an amendment of the act of 11 June, 1879, P. L., 123.

**390.** It shall be the duty of the board of fire commissioners in conjunction with the fire marshal of the district where such commissioners and fire marshal are elected or appointed, to first examine and test such fire escape or escapes, and, after upon trial said fire escape or escapes should prove to be in accordance with the requirements of section one of this act, then the said fire marshal, in connection with the fire commissioners, or a majority of them, shall grant a certificate approving said fire escape, thereby relieving the party or parties to whom such certificate is issued from the liabilities of fines, damages and imprisonment imposed by this act: *Provided further*, That in counties where no such fire marshal or fire commissioners exist then the county commissioners in each said county shall be the board of examiners, and shall grant certificates of approval when escapes are erected in accordance with the requirements of section one of this act. \* \* \* \* \*

3 June, 1885.

Number and location to be determined by size of building and number of inmates.

Description of.

Certain buildings to have two or more such escapes.

Duty of owners, trustees, &c., to provide and cause to be securely affixed such escapes.

Any escape approved by the proper authorities, may be adopted in place of those designated.

*Ibid*, § 2.

Examination and approval of fire escapes, by fire commissioners and marshal. If approved, certificate to be granted.

Effect of certificate of approval.

County commissioners to be board of examiners in certain counties.

3 June, 1885.

Neglect or refusal to comply with act declared a misdemeanor, punishable by fine or imprisonment or both.

Liability for damages sustained by neglect or refusal to provide proper fire escapes.

Criminal liability.

Penalty.

By whom such action may be maintained.

This act not to interfere with approved escapes now in use.

**391.** Every person, corporation, trustee, board of education and board of school directors neglecting or refusing to comply with the requirements of section one of this act, in erecting said fire escape or escapes shall be liable to a fine not exceeding three hundred dollars, and also be deemed guilty of a misdemeanor punishable by imprisonment for not less than one month or more than two months. And in case of fire occurring in any of said buildings, in the absence of such fire escape or escapes approved by certificate of said officials, the said person or corporations shall be liable in an action for damages in case of death or personal injuries sustained in consequence of such fire breaking out in said building, and shall also be deemed guilty of a misdemeanor punishable by imprisonment for not less than six months nor more than twelve months; and such action for damages may be maintained by any person now authorized by law to sue as in other cases of similar injuries: *Provided*, That nothing in this act shall interfere with fire escapes now in use approved by the proper authorities.

It will be observed that this act, and also the following one, imposes the duty of erecting fire-escapes upon the owner in fee or for life of the property. Under the act of 11 June, 1879, P. L., 128, it had been decided that the "owner" is the person having possession and control of the building, and that a tenant in possession under a lease from the owner, is liable, and not the landlord.—*Schott v. Harvey*, 105, Penn. St., 222; *Keely v. O'Conner*, 106 Penn. St., 321. The means of escape provided are not required to be the very safest that can be devised: but they must be such as are safe in the judgment of ordinarily prudent men. A defendant who has built such an escape cannot be held responsible, if the fire originated in that part of the building where it was located, and thus cut off access to it.—*Keely v. O'Conner*, above.

3 June, 1885, \* § 1.  
P. L., 65.  
P. D., 2307.

Fire escapes consisting of chain and rope fastened to windows.

How affixed.

Description of chain and rope.

**392.** In addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, workshop, tenement house, school, seminary, college, academy, hospital, asylum, hall or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy, hospital or asylum, owning or using any building constructed more than two stories high, and used or intended to be used for any of said purposes, and of the board of education, or board of school directors, having charge of any building constructed more than two stories high, and used or intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall over the window head inside of at least one window, in each room, on the third floor, and in each room on each higher floor of every such building, a chain at least ten feet in length with a rope at least one inch in diameter securely attached thereto of suffi-

\*This act is an amendment of the act of 1 June, 1883, P. L., 50, P. D., 814, which was supplementary to that of 11 June, 1879, P. L., 128, P. D., 813.

cient length to extend to the ground, or such other appliance as may be approved by the board of fire commissioners of any city or county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided, however,* That when the third floor, or any higher floor, of any such building is not sub-divided into rooms then at least six windows on each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire-commissioners shall exist: *And provided further,* That whenever any room on the third floor, or on any higher floor, of any such building shall contain more than three windows, then at least one window out of every three windows, in every such room shall be provided with such chain and rope or such other appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners. And each of such ropes shall be coiled and kept in an unlocked box in an unobstructed place, near the inside sill of the window to which such rope is attached. And in all hotels, factories, manufactories, workshops, schools, seminaries, colleges, hospitals, asylums, halls or places of amusement, or other places mentioned in this act, the hallways and stairways shall be properly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night a red light; and one or more proper alarms or gongs capable of being heard throughout the building shall always remain easy of access and ready for use in each said building to give notice to the inmates in case of fire. And every keeper of such hotel, factory, manufactory, workshop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room a notice descriptive of such means of escape. And the board of fire commissioners and the county commissioners of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or such other appliances in conformity with this act to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustee, board of education, and board of school directors, complying with the requirements of this act, which certificates shall relieve the party or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act.

**393.** Every person, corporation, trustee, board of education, and board of school directors, neglecting or refusing to comply with the requirements of the first section of this act, shall be liable to a fine, not exceed-

3 June, 1885

To be approved by fire, or county commissioners.

At least six windows on the third or any higher floor to be so provided.

Rooms with more than three windows shall have one out of three so provided.

How and where ropes to be kept.

All buildings as aforesaid to be properly lighted at night.

Alarms and gongs to be kept ready for use.

Notices descriptive of escapes to be posted in each sleeping room.

Commissioners may fix location of escapes, &c., and grant certificates of approval thereof.

Ibid, § 2.

Neglect to comply with act a misdemeanor.



3 June, 1885.

Penalty.

Liability for injuries resulting from neglect of provisions of the act.

ceeding three hundred dollars, to be collected as fines are now by law collectable, and shall also be deemed guilty of a misdemeanor, punishable by imprisonment for not less than one month, nor more than twelve months. And in case of fire occurring in any such building not provided with the chains and ropes, or such other appliances as may be required by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist, in accordance with the requirements with the first section of this act, the person, persons, trustee, trustees, corporation, board of education, or board of school directors, who or which neglected or refused to provide such building with the chains and ropes, or such other appliances as aforesaid, shall be liable in an action for damages in case of death or personal injury being caused in consequence of such fire breaking out in said building, and such action may be maintained by any person or persons now authorized by law to sue in other cases for injuries caused by neglect of duty.

### Female Employees.\*

22 March, 1887, § 1.  
P. L., 7.  
P. D., 2208.

Suitable seats for female employees to be provided.

And used by them.

Ibid, § 2.

Penalty.

Appropriation of penalties.

Imprisonment in default of payment.

**394.** Every person, firm, association, individual, partnership or corporation employing female employés in any manufacturing, mechanical or mercantile establishment in this State, shall provide suitable seats for the use of the female employés so employed, and shall permit the use of such, by them, when they are not necessarily engaged in the active duties for which they are employed.

**395.** Any person, firm, association, individual, partnership or corporation violating any of the provisions of this act, shall, upon conviction thereof before any magistrate, alderman or justice of the peace, be sentenced to pay a fine of not less than twenty-five, nor more than fifty dollars, to be paid into the treasury of the proper county, and costs for each offense, and any failure to pay the same shall be committed to the proper jail until discharged according to law.

### Employment of Children.\*

1 June, 1887, § 1.  
P. L., 287.  
P. D., 2218.

Employment of children under 12 years of age, at any mill, manufactory or mine prohibited.

Ibid, § 2.

Penalty.

**396.** It shall be unlawful for any person, persons, firms, companies, associations or corporations, to employ any child under the age of twelve years to do any work in or about any mill, manufactory or mine in this Commonwealth.

**397.** Any person, persons or corporations who may violate this act, shall, on conviction, pay a fine of not less than twenty dollars nor more than one hundred dollars, at the discretion of the court. Said fines, arising from the violation of this act, shall be paid to the

\* See 414, 441, acts 30 June 1885, as to employment of females and boys in coal mines.

treasury of the proper county, where said violation shall occur.

Any person, other than an institution duly incorporated for the purpose, who shall engage in the business of receiving, boarding or keeping infant children, under the age of three years, for hire or reward, who shall receive or take for such purpose more than two such children without legal commitment, or without having first obtained a license in writing so to do from the mayor of the town or a justice of the peace or magistrate of the locality wherein such child is to be received, boarded or kept, shall be guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding one hundred dollars.

It shall and may be lawful for the mayor of any city or town, or any justice of the peace or magistrate of the locality, within which any child is to be received, boarded or kept as specified in section two, at his discretion, to issue a license to any person applying therefor for the purposes specified in section two of this act, upon the payment of a fee of one dollar for the use of the county, which license shall be revocable at all times by the court of quarter session or any judge thereof upon cause shown. It shall be lawful for any member or officer of the State Board of Charities, or the board of health of the locality wherein such license is issued, or any duly authorized officer of any incorporated society for the protection of children from cruelty, at all reasonable times, to enter and inspect the premises wherein any such children are boarded, received or kept.

### Health and Safety of Miners.

398. [The health and safety of persons employed in and about coal mines has been the subject of considerable legislation in Pennsylvania, the most important act previous to those of 1885, being that of 3d March, 1870, P. L., 3; P. D., 1177. Other acts were those of 22 April, 1870, P. L., 1256; P. D., 1182, for Mercer county only; 5 April, 1870, P. L., 50; P. D., 1190; 18 April, 1877, P. L., 56; P. D., 1179; 10 May, 1881, P. L., 17, P. D., 1183; 1 June, 1883, P. L., 55; P. D., 1184. The acts, 30 June, 1885, P. L., 205, relating to bituminous and 30 June, 1885, P. L., 218, set forth below, 399, relating to anthracite mines, are extremely full and elaborate in detail, and repeal all previous laws inconsistent with or supplied thereby. While too voluminous to be introduced here without condensation, the leading features are presented, and many sections are set forth without change.]

### Bituminous Mines.

399. The owner, operator or superintendent of every bituminous coal mine, shall make \* \* \* \* an accurate map or plan of such coal mine, on a scale not exceeding one hundred feet to the inch, which \* \* \* \* shall exhibit all the openings or excavations, the shaft, tunnels, \* \* \* \* gangways, \* \* \* \* *et cetera*, and shall show the direction of the air currents therein, and shall accurately delineate the boundary lines between said coal mine and adjoining mines operated by other parties, and show the relation and proximity of the workings thereto. The maps shall also show the changes of level of the lowest entry in use for drainage connecting with each independent opening. The said map or plan, or a true copy thereof, together with a record of all the surveys of said bound-

28 May, 1885, § 2.  
P. L., 27.  
P. D., 2218.

Boarding of young infants regulated.

Violation of this section deemed a misdemeanor.

*Ibid*, § 2.

Mayor or justice of the peace may issue license to engage in the business of boarding and keeping such infants.

Board of public charities, or of health, may enter and inspect premises.

Sundry mining laws now embodied in acts of 30 June, 1885, P. L., 205, 218.

30 June, 1885, § 1.  
P. L., 205.  
P. D., 2218.

Maps or plans of mines to be made by the owners, &c.

Maps shall show openings, &c.

Changes of level.

Map, or copy, shall be kept at mine for inspection.

30 June, 1895.

Progress of work shall be accurately noted on map once in every six months

Proximity to boundary lines, or abandonment of mine, to be traced on a map and furnished to the inspector within three months thereafter.

Maps or plans to be property of the commonwealth, and be in custody of the inspector.

And be transferred to his successor.

Copies not to be made without consent of owner.

Ibid, § 2.

Two openings to be made to each mine.

Description of openings when mine is worked by shaft or slope.

When mine is worked by drift.

Not more than twenty persons to be employed in mine until second opening is made.

any lines and openings and excavations aforesaid, shall be kept at such mine \* \* \* \* for the use of the mine inspector, and for the inspection of any miner working in said mine, \* \* \* \* . The said owner, operator or superintendent shall, as often as once in every six months, accurately place \* \* \* \* on the map of said \* \* \* mine, a plan of the excavations made of all other parts of such coal mine, during the preceding six months; and, whenever the workings or excavations of said coal mine, or any part of the same have been driven to within ten feet of the boundary line, or when said coal mine, or any part of the same, is abandoned, the owner, operator or superintendent thereof shall furnish the mine inspector within three months after, the proximity to the boundary line as aforesaid, or after abandonment of the said mine, or any part of the same, with a correct copy, on tracing muslin, of the map or plan of said mine, which shall accurately show all excavations and workings of such mine to date, exhibiting clearly the part or parts abandoned, and the part or parts in proximity to the boundary line aforesaid. The maps or plans of the several coal mines in each district, which are furnished to mine inspector as last aforesaid, shall be the property of the Commonwealth, and shall remain in the care of the inspector of the district in which the said mines are situated, to be transferred by him to his successor in office, and in no case shall any copy of the same be made without the consent of the owner, operator or his agent.

**400.** It shall not be lawful for the owner, operator, contractor, lessee or agent of any bituminous coal mine, or for any firm, company, corporation or association, their clerks, servants, agents or employes, to employ any person at work within said coal mine, or permit any person to be in said coal mine for the purpose of working therein unless they are in communication with at least two openings, if the mine be worked by shaft or slope, \* which two shafts or slopes shall be separated by natural strata at all points by a distance of not less than one hundred and fifty feet, except in mines already opened, such distance may be less, if in the judgment of the mine inspector one hundred and fifty feet is impracticable; and if the mine be worked by drift, two openings, exclusive of the air shaft, and not less than twenty-four feet apart, shall be required, except in drift mines heretofore opened, where the mine inspector of the district shall deem it impracticable: *Provided however*, That an aggregate number, not exceeding twenty persons, may be employed in the mine at any one time until the second opening shall be reached and made available, which said second opening, the mine inspector shall cause to be made without necessary delay; and, in case of furnace ventilation

\*This does not embrace a coal mine operated through a tunnel. Cwith v. Connell, 2 Luz. Leg. Reg., 1.

being used before the second opening is reached, the furnace shall not be placed within forty feet of the foot of the shaft, slope or drift, and shall be well secured, from danger from fire, by brick or stone walls of sufficient thickness, while being driven for making and perfecting the second opening. †

401. When the second opening or outlet is made which does not exceed seventy-five feet in vertical depth from the surface to the seam or stratum of coal that is being mined, it shall be set apart exclusively for the purpose of ingress or egress to or from the mine by \* \* \* \* \* persons employed therein, and it shall not be clogged or obstructed with ice, machinery, pumps, or currents of heated air or stream; and if the opening is a shaft, it shall be fitted with safe and convenient stairs, \* \* \* \* \* and all water coming from the surface or out of the strata in the shaft shall be conducted by rings, casing or otherwise, and be prevented from so falling down the shaft as to wet persons who are ascending or descending the stairway of the shaft. \* \* \* \* \* When the seam or stratum of coal, at main outlet or escapement shaft in connection with any mine, exceeds seventy-five feet in vertical depth from the surface, the employes in the mine shall be lowered into or raised from the said mine by machinery. \* \* \* \* \* The hoisting machinery and stairs used for lowering or raising the employes into or out of the mine shall be kept in a safe condition, and inspected once each twenty-four hours by a competent

20 June, 1885,

Location, &c., of furnace, when furnace ventilation is used.

Ibid, § 2.

Second opening to be used exclusively for purpose of ingress or egress.

Not to be obstructed.

How to be fitted when opening is a shaft.

When opening is a slope for a traveling way.

When seam at main outlet is more than seventy-five feet in vertical depth from the surface.

Hoisting machinery to be kept in a safe condition, and inspected daily.

† Where, in connection with a mine or colliery, a shaft has been sunk to, or a slope driven in a seam or *stratum* of coal which is in communication with a second outlet at the point where the mining is carried on, and a field of coal has there been exhausted; yet, if from that point, a slope be continued on following the pitch of the seam or *stratum* down several hundred feet, and at the bottom thereof extensive mining be carried on in the same, and there is no second outlet communicating therewith, separated from such slope by natural strata of at least one hundred and fifty feet in breadth, the mine or colliery is within the legislative inhibition; and an injunction will be granted to restrain the owners, lessees or occupants thereof from thus working the same. *Cwlth. v. Wilkes-Barre Coal Co.*, 29 Leg. Int., 213. This case reaffirms the constitutionality of the "Mine Ventilation Law" of 3 March, 1870, P. L., 3, the provisions of which are embodied in the acts of 30 June, 1885. See also *Cwlth. v. Bonnell*, 8 Phila., 534.

A coal mine, containing five strata or seams of coal, was operated through a shaft extending from the surface through the various seams of coal; and the entrance to the shaft was covered by the breaker. In the first and third seams fifty or more miners were employed, mining coal for market. The second and fourth seams were not being worked. In the fifth seam a number of miners, not exceeding twenty, were engaged in working a gangway to connect with a second opening, which had not been completed to that seam, although said second opening or outlet was already connected with the first and third seams, in accordance with the requirements of the act. Under sections three and five of said act, the inspector of mines filed a bill in equity to restrain the working of the first and third seams, at the same time that work was being carried on to make a second opening or outlet in the fifth seam. *Held*, that under the proviso to the third section of said act, the work might be carried on as above stated. *Haddock v. Cwlth.*, 103 Penn St., 243. (The above decisions all refer to the act of 3 March, 1870, P. L., 3, P. D., 1177.)

20 June, 1886.

Speaking tubes.

Means of signaling

Safety catch, &amp;c.

Number to be lowered or hoisted at one time.

Notice of number to be posted.

Ibid, § 4.

Duty of owners, &amp;c., in regard to ventilation of mines.

Fire damp.

Fire-boss to examine before every shift.

Miners prohibited from entering mine until it has been examined.

Ibid, § 5.

Mining boss to be employed.

His qualifications, and duties in regard to ventilation, &amp;c.

Loose coal.

Props, caps and timbers.

person employed in whole or in part for that purpose.

\* \* \* \* \* The owner, operator, lessee or agent shall provide and maintain a metal speaking tube from the top to the bottom of the shaft, \* \* \* \* also the ordinary means of signaling to and from the top and bottom of the shaft, and an approved safety catch, and sufficient cover over head on every carriage used for lowering and hoisting persons; \* \* \* \* and no greater number of persons shall be lowered or hoisted at any one time than may be permitted by the inspector of the district; and notice of the number so allowed to be lowered or hoisted at any one time shall be kept posted up by the owner, operator or superintendent in a conspicuous place at the opening of the shaft.

**402.** The owner or agent of every bituminous coal mine, whether shaft, or slope, or drift, shall provide and hereafter maintain for every such mine ample means of ventilation, affording not less than one hundred cubic feet per minute for each and every person employed in said mine, and as much more as the circumstances may require, which shall be circulated around the main headings and cross-headings and working places to an extent that will dilute, carry off and render harmless the noxious or dangerous gases generated therein; and all mines generating fire-damp shall be kept free of standing gas in the worked-out or abandoned parts of the same as far as practicable, and the entrance thereto shall be properly closed, and cautionary notice shall be posted to warn persons of danger; and every working place, and all other places, where gas is known to exist or supposed to exist, shall be carefully examined by the fire-boss, immediately before each shift, with a safety lamp, and in making said examination, it shall be the duty of the fire-boss at each examination to leave at the face of every place, so examined, evidence of his presence; and it shall not be lawful for any miner to enter any mine or part of mine generating fire-damp, until it has been examined by the fire-boss as aforesaid and reported by him to be safe.

**403.** In order to better secure the proper ventilation of every coal mine, and promote the health and safety of the persons employed therein, the owner or agent shall employ a competent and practical inside overseer, to be called mining boss, who shall be a citizen and an experienced coal miner, and shall keep a careful watch over the ventilating apparatus and the air-ways, traveling-ways, pumps and pump timbers and drainage; and shall see that, as the miners advance their excavations, all loose coal, slate and rock overhead are carefully secured against falling therein, or on the traveling-ways, and that sufficient props, caps and timbers are furnished, of suitable size and cut square at both ends and as near as practicable to a proper length for the places where they are to be used; \* \* \* \*

and shall see that all water be drained or hauled out of all working places before the miner enters, and as far as practicable kept dry while the miner is at work. And it shall be the duty of the mining boss\* to see that proper cut-throughs are made in the room pillars of the miners' places, [for the purpose of ventilation.]

\* \* \* \* \* And in all traveling-ways or road, holes for shelter shall be made at least every thirty yards and be kept whitewashed, a space two feet six inches between the wagon and the rib shall be deemed sufficient for shelter. And the mining boss shall measure the air current, at least once a week, at the inlet and outlet and at or near the face of the headings, he shall keep a record of such measurements \* \* \* \* \*

for the examining of the inspector of the district; he shall, also, on or about the fifteenth day of each month, mail to the inspector of his district a true copy of the air measurements given, stating also the number of persons employed in or about said mine. \* \* \* \* \*

The safety lamps used for examining mines, or which may be used in working therein, shall be furnished by and be the property of the owner of said mines, and shall be in charge of the agent of such mine; and in all mines, the doors, used in assisting or directing the ventilation of the mine, shall be so hung and adjusted that they will close themselves, or be supplied with springs or pulleys so that they cannot be left standing open; and bore holes shall be kept not less than twelve feet in advance of the face, and when necessary, on the sides of working places, which are being driven towards and in dangerous proximity to an abandoned mine, or part of a mine suspected of containing inflammable gases, or which is inundated with water. The mining boss, his assistant, or assistants, shall visit and examine every working place in the mine, at least once every alternate day, while the miners of such place are or should be at work. \* \* \* \* \* All owners or operators of bituminous coal mines shall keep posted, in a conspicuous place about their mines, printed rules, submitted to and approved by the district mining inspector, defining the duties of all persons employed in or about said mines or collieries, which said notice shall be printed in the language or languages used by any ten miners working therein.

**404.** Any miners, workmen or other person, who shall intentionally injure any shaft, lamp, instrument, air-course or brattice, or obstruct or throw open air-ways, or carry lighted pipes or matches into places that are worked by safety lamps, or handle or disturb any part of the machinery, or open a door and not close it

30 June, 1885.

Drainage.

Cut-throughs.

Holes for shelter.

Air currents to be measured.

Record of measurements to be kept, &c.

Copy of measurements, &c., to be sent monthly to the inspector.

Safety lamps to be property of owner of mines.

Adjustment of doors used for ventilation.

Bore holes.

Visitation and examination to be made every alternate day.

Printed rules to be kept posted.

Ibid, § 6.

Willful injury to shaft, lamp, &c., declared a misdemeanor.

\* A mining boss has no discretion in the performance of his duties; nor can he delegate them to another; but if the company take from his charge a particular portion of the mine, and place it in charge of another, he will not be responsible for neglect of duty in that portion of the mine, though the company may be responsible in case of accident.—Cwlth. v. Reynolds, 1 Kulp, 218.

30 June, 1836.	
Punishment.	
Machinery, &c., to be fenced off.	
Traveling way to be cut in the side of every hoisting shaft.	
Ibid, § 7.	
Proceedings for making openings on adjoining lands.	
Viewers to be appointed and their duties.	
Ibid, § 8.	
In year 1836, and every four years thereafter, governor to appoint two mining engineers.	
Qualifications.	
President judges to appoint three miners.	
Qualifications of miners.	
Certain miners disqualified.	
Board of examiners constituted.	
Duties of the board	
Time and place of meeting.	
Qualifications of candidates for office of inspectors.	

again, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or do any other act whereby the lives or the health of persons, or the security of the mines or the machinery, is endangered, shall be deemed guilty of a misdemeanor, and may be punished in a manner provided in the twenty-first section of this act; all machinery about mines shall be properly fenced off, and there shall be cut, in the side of every hoisting shaft at the bottom thereof, a traveling way sufficiently high and wide to enable persons to pass the shaft, in going from one side of the mine to the other, without passing over or under the cage or other hoisting apparatus.

**405.** If any person, firm or corporation is or shall hereafter be seized in his or their own right of coal lands, and it shall not be practicable to comply with the requirements of this act in regard to drainage and ventilation, by means of openings on his or their own lands, and the same can be done by means of openings on adjacent lands, he or they may apply by petition to the court of quarter sessions of the proper county, after failure to agree with the owner as to price; \* \* \* whereupon, the said court shall appoint three disinterested and competent citizens of the county to view the ground designated, and lay out, from the point or points mentioned in such petition, a passage or passages for air and water, not more than sixteen feet in diameter. \* \* \*

**406.** In the year one thousand eight hundred and eighty-nine, and every four years thereafter, the governor shall, as hereinafter provided, during the month of February, appoint two mining engineers of good repute and of known experience and practice at the time; he also shall, as hereinafter provided, during the same month and every four years thereafter, notify three president judges of the courts of common pleas of the judicial districts of the State containing bituminous coal mines. whose duty it shall be, each of them, to appoint one reputable miner, of at least five years practical experience in the mining region of Pennsylvania, in practice at least three months prior to his appointment, and a citizen of the Commonwealth not less than five years: *Provided*, That any person having been employed, five months prior to the meeting of the examining board, as superintendent, state or county officer shall not serve on examining board. The two engineers and the three miners so appointed shall constitute a board of examiners, whose duty it shall be to inquire into the character and qualifications of candidates for the office of inspector of mines, under the provisions of this act. The examining board so constituted shall meet in the city of Pittsburgh, on the first Monday of April, and, when called together by the Governor for extra occasions, at such time and place as he may designate. \* \* \* The qualification of candidates for said office of inspectors of mines, to be inquired into

and certified by said examiners, shall be as follows, namely: They shall be citizens of Pennsylvania, of temperate habits, of good repute as men of personal integrity, shall have attained the age of thirty years, and shall have had at least five years practical experience in the workings of the coal mines of Pennsylvania, and, upon the examination, they shall give evidence of such theoretical as well as practical knowledge, and general intelligence regarding mines and mining and the working thereof, and all noxious gases, as will satisfy the examiners of their capability and fitness for the duties imposed upon inspectors of mines, by the provisions of this act. The board of examiners shall also at their meeting, or when at any time called by the Governor together for an extra meeting, divide the bituminous coal counties of the State into eight inspection districts. \* \* \* \*

30 June, 1886.

Division of state  
into eight districts.

Each inspector of mines shall receive for his services an annual salary of two thousand dollars and actual traveling expenses, to be paid quarterly by the State Treasurer upon warrant of the Auditor General; and all mine inspectors hereafter appointed shall make their residence and keep an office in the district for which they are commissioned. \* \* \* \*

Salaries, &c., of in-  
spectors.

407. Each inspector of bituminous coal mines shall, before entering upon the discharge of his duties, give bond in the sum of five thousand dollars, \* \* \* \* \* conditioned for the faithful discharge of his duty, and take an oath (or affirmation) to discharge his duties impartially and with fidelity to the best of his knowledge and ability.

Ibid, § 9.

Inspectors to give  
bond, with sureties.

And be sworn.

But no person, who shall act as a manager or agent of any coal mine, or as a mining engineer, or to be interested in operating any coal mine, shall, at the same time, act as an inspector of coal mines under this act.

Certain persons not  
to act as inspectors.

408. The inspector of bituminous coal mines shall each devote the whole of his time to the duties of his office; it shall be his office to examine the mines in his district, as often as possible, which shall not be less than once in three months, (and report how often he has visited each mine in the year), to see that all the provisions of this act are observed and strictly carried out; and he shall make record of all examinations of mines showing the condition in which he finds them, especially in reference to ventilation and drainage, the number of mine in his district, the number of persons employed in each mine, the extent to which the law is obeyed, and progress made in the improvement sought to be secured by the passage of this act, the number of accidents and deaths resulting from injuries received in or about the mines, with cause of such accident or death, which record, completed to the thirty-first day of December of each and every year, shall, on or before the first day of February following, be filed in the office of the Secretary of Internal Affairs,

Ibid, § 10.

Duties of in-  
spectors.Record of examina-  
tions.Report to be filed  
with and published  
by secretary of in-  
ternal affairs.



30 June, 1895.

*Ibid*, § 11.

Inspectors may enter mines at all times.

And notify owners of violations of acts.

And institute proceedings against them.

*Ibid*, § 12.

Explosions, or other accidents, to be reported to the inspector.

Coroner to be notified.

*Ibid*, § 13.

*Ibid*, § 14

Proceedings in case of dissatisfaction with any decision of the inspector.

*Ibid*, § 15.

Fire boss not to act without certificate.

Owners, &c., forbidden to employ unauthorized mining or fire boss.

Liability of owner, &c., for such employment in case of accident.

to be by him recorded and included in the annual report of his department.

409. That the inspectors may be enabled to perform the duties herein imposed upon them, they shall have the right at all times to enter any bituminous coal mine, to make examination, or obtain information; they shall notify the owners, operators, lessees, superintendent, or mining bosses, in writing and keep a copy thereof, immediately of the discovery of any violation of this act, \* \* \* \* \* and in case of such notice being disregarded for the space of five days, they shall institute proceedings against the owner, operator, lessee, superintendent, or mining boss, of the mine, under the provisions of section twenty-one of this act; and may apply to court for an injunction to suspend all work in and about such mine.]

410. Whenever, by reason of any explosion, or other accident, in any bituminous coal mine or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such mine or colliery to give notice thereof forthwith to the inspector of the district, and if any person is killed thereby to the coroner of the county, who shall give due notice of the inquest to be held \* \* \* \*

411. [Provides for the removal of mine inspectors for cause on petition to the court of common pleas.]

412. [Provides for an appeal to court of quarter sessions by mine owners, or miners, in case of dissatisfaction with any decision of an inspector.]

413. [On petition of an inspector, court of common pleas may appoint a county examining board, consisting of a mine inspector, an operator and a miner, to examine candidates for the position of mining-boss.]

No person shall act as fire boss in any bituminous mine, unless granted a certificate of competency by any of the mine inspectors of the bituminous region of Pennsylvania, and it shall be unlawful for any owner, operator, contractor, superintendent, or agent to employ any person as fire boss who has not obtained such certificate.

After January first, one thousand eight hundred and eighty-six, no owner, operator, contractor, lessee, superintendent or agent shall employ any mining boss or fire boss, who does not have the certificate of competency or service required by this section.

And if any accident shall occur, in any mine in which a mining boss or fire boss shall be employed, who has no certificate of competency or service as required by this section, by which any miner shall be killed or injured, he or his heirs shall have a right of action against such operator, owner, superintendent, contractor, lessee or agent, and shall recover the full value of the damages sustained.

414. No boy, under the age of twelve years, and no woman or girl of any age, shall be employed or permitted to be in any bituminous coal mine for the purpose of employment therein, nor shall any boy under the age of ten years, or any woman or girl of any age, be employed or permitted to be in or about the outside structure or workings of any bituminous mine or colliery, for the purpose of employment: *Provided however*, That this provision shall not affect the employment of a boy or a female of suitable age in an office, or in the performance of clerical work at such mine or colliery.

30 June, 1885, § 16.  
Boys under a certain age, and all girls and women prohibited from being employed.

Except as to office or clerical work.

415. For any injury to person or property occasioned by any violation of this act, or any wilful failure to comply with its provisions, a right of action against the party at fault shall accrue to the party injured for the direct damage sustained thereby; and in any case of loss of life by reason of such violation or wilful failure, a right of action against the party at fault shall accrue to the widow and lineal heirs of the person, whose life shall be lost, for like recovery of damages for the injury they shall have sustained.

Ibid, § 17.

Liability of owners, &c., for damages.

416. It shall be the duty of owners, operators, contractors, superintendents, lessees or agents to keep at the mouth of the drift, shaft, or slope, or at such other place as shall be designated by the mine inspector, stretchers properly constructed for the purpose of carrying away any miner or employé working in or about such mine, who may in any way be injured in and about his employment.

Ibid, § 18.

Owners, &c., to keep stretchers at mouth of the drift, &c.

417. It shall be the duty of the mine inspector, on each visit to any mine, to make out a written, or partly written and partly printed, report of the condition in which he finds such mine and post the same in the office at the mine. The said report shall give the date of the visit, the number of visits during the year, the total number of mines in his district, the number of feet of air in circulation and where measured, and such other information as he shall deem necessary; and the said report shall remain posted in the office for one year, and said report may be examined by any miner or person employed in and about such mine.

Ibid, § 19.

Inspector to make report of the condition of mine, and post same.

Contents of such report.

To remain posted for a year.

418. [Provides for annual report on or before January 15, by the owner, operator or superintendent of every mine, to the inspector of his district.]

Ibid, § 20.

419. The neglect or refusal to perform the duties required to be performed by any section of this act, by the parties therein required to perform them, or the violation of any of the provisions or requirements hereof, shall be deemed a misdemeanor, and shall upon conviction be punished by fine of not less than two hundred dollars and not exceeding five hundred dollars, at the discretion of the court. And in default of payment of such fine and costs for the space of ten days, the defendant shall be sentenced to imprisonment in the county jail for a period not exceeding six months.

Ibid, § 21.

Violation of provisions of this act declared a misdemeanor.

Penalty.

30 June, 1885, § 22.

Act not to apply to  
certain mines.

**420.** The provisions of this act shall not apply to any mine employing less than ten persons in any one period of twenty-four hours.

## Anthracite Mines.

### ARTICLE I.

30 June, 1885, § 1.

P. L., 215.  
P. D., 223.

**421.** This act shall apply to every anthracite coal mine or colliery in the Commonwealth, provided the said mine or colliery employs more than ten persons.

### ARTICLE II.

#### INSPECTORS AND INSPECTION DISTRICTS.

Art. II, § 1.

**422.** [Anthracite coal field divided into seven inspection districts.]

Ibid, § 2.

**423.** [Examining boards to be appointed by the court of common pleas.]

Ibid, § 3.

Qualifications and  
number of exami-  
ners.

When to be ap-  
pointed, and term  
of office.

Vacancies to be  
filled by the court.

**424.** The said board of examiners shall be composed of three reputable coal miners, in actual practice, and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year to hold their places during the year. Any vacancies that may occur in the board of examiners shall be filled by the court as they occur.

Ibid, § 4.

Public notice to be  
given of time and  
place of meeting.

**425.** Whenever candidates for the office of inspector are to be examined, the said examiners shall give public notice of the fact, in not less than two papers published in the county \* \* \* \*.

Governor to ap-  
point on recom-  
mendation of  
board.

And commission  
for term of five  
years.

Upon the recommendation of the board of examiners as aforesaid, the Governor shall appoint such person to fill the office of inspector of mines under this act and shall issue to him a commission for the term of five years, subject, however, to removal for neglect of duty or malfeasance in office, as hereinafter provided for.

Ibid, § 5.

Qualifications of  
inspector of mines.

**426.** The person so appointed must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of working coal mines, and have been practically connected with the anthracite coal mines of Pennsylvania for a period of not less than five years, and he must also have had experience in the working and ventilation of coal mines where noxious and explosive gases are evolved. \* \* \* \*

Must provide him-  
self with instru-  
ments, &c.

He shall also provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

Ibid, § 7.

Residence and at-  
tention to duties.

**427.** Each of the said inspectors shall reside in the district for which he is appointed, and shall give his whole time and attention to the duties of the office. He shall examine all the collieries in his district as often as his duties will permit, not less than four times a year, or oftener if the exigencies of the case or the condition of the mines require it, see that every neces-

Duties.

sary precaution is taken to secure the safety of the workmen, \* \* \* \* and make an annual report of his proceedings to the Secretary of Internal Affairs of the Commonwealth at the close of every year, enumerating all the accidents in and about the collieries of his district. \* \* \* \* and the result of his labors generally shall be fully set forth.

**428.** [Board of examiners may readjust districts.]

**429.** No person, who shall act or practice as a land agent, or as the manager, or agent of any coal mine or colliery, or as a mining engineer, or who is pecuniarily interested in operating any coal mine or colliery in his district, shall at the same time hold the office of inspector of mines under this act.

**430.** [On petition of fifteen reputable coal operators or miners to court of common pleas inspectors may be removed for cause.]

**431.** The persons who at the time this act goes into effect are acting as inspectors of mines under the acts hereby repealed shall continue to act in the same manner as if they had been appointed under this act and until the term for which they were appointed has expired.

### ARTICLE III.

#### SURVEYS, MAPS AND PLANS.

**432.** [See preceding act, **399**, the provisions of which are similar to those of this article.]

### ARTICLE IV.

#### SHAFTS, SLOPES, OPENINGS AND OUTLETS.

**433.** [Prohibits the employment of persons in mines prohibited unless there are two outlets to each seam of coal. Sections 1-21 of this article cover much the same ground as §§ 2, 3 and 4 of the preceding act, **400-1-2**.]

The following rules shall be observed as far as practicable in every shaft to which this act applies:

*First.* After each and every blast the chargeman must see that all loose material is swept down from the timbers before the workmen descend to their work.

*Second.* After a suspension of work, and also after firing a blast in a shaft where explosive gases are evolved, the person in charge must have the said shaft examined and tested with a safety lamp before the workmen are allowed to descend.

*Third.* Not more than four persons shall be lowered or hoisted in any shaft on a bucket at the same time, and no person shall ride on a loaded bucket.

*Fourth.* Whenever persons are employed on platforms, in shafts, the person in charge must see that the said platforms are properly and safely constructed.

*Fifth.* While shafts are being sunk all blasts therein must be exploded by an electric battery.

30 June, 1886.

Make annual report to secretary of internal affairs.

Contents of report.

Ibid, § 8.

Ibid, § 10.

Certain persons disqualified from holding the office of inspector of mines.

Ibid, § 11.

On petition to the court, inspectors may be removed on cause shown.

Ibid, § 12.

Present inspectors to serve out their respective terms,

Map or plan of mine to be made by owners, &c.

Ibid, § 22.

Rules to be observed.

30 June 1886,

*Sixth.* Every person who fails to comply with or who violates the provisions of this article shall be guilty of an offense against this act.

## ARTICLE V.

## BOILERS AND CONNECTIONS, MACHINERY, ET CETERA.

**434.** [The ten sections of this article provide that all boilers in and about mines shall be kept in good order and inspected every six months; that no boiler shall be placed within one hundred feet of a coal breaker hereafter erected; proper safety-valves and steam-gauges shall be used; all machinery and stairs shall be protected by covering or railing; a signal apparatus shall be established at important points in every breaker; all tampering with machinery is prohibited.]

## ARTICLE VI.

## WASH HOUSES.

*Ibid.*, § 1.  
Convenient wash-house to be provided, on request of inspector.

How to be kept and supplied.

Penalty for failure to provide, or for injury to wash-house, &c.

**435.** It shall be the duty of the owner, operator or superintendent of each mine or colliery, at the request in writing of the inspector of mines, to provide a suitable building, not an engine or boiler house, which shall be convenient to the principal entrance of such mine, for the use of the persons employed therein for the purpose of washing themselves and changing their clothes when entering the mine and returning therefrom. The said buildings shall be maintained in good order, be properly lighted and heated, and supplied with pure cold and warm water, and shall be provided with facilities for persons to wash. If any person or persons shall neglect or fail to comply with the provisions of this article, or maliciously injure, or destroy, or cause to be injured or destroyed, the said building, or any part thereof, or any of the appliances, or fittings used for supplying light, heat and water therein, or doing any act tending to the injury or destruction thereof, he or they shall be deemed guilty of an offense against this act.

## ARTICLE VII.

## AMBULANCES AND STRETCHERS.

**436.** [An ambulance and stretchers of approved construction shall be kept at all mines employing twenty or more persons, except where all the workmen live within half a mile of the principal entrance to the mine; and one ambulance will serve for two mines situated within a mile of each other.]

## ARTICLE VIII.

## CERTIFIED MINE FOREMAN.

Art. VIII, § 1.  
After July 1, 1886, mine foremen to be registered.

**437.** From and after the first day of July, one thousand and eight hundred and eighty-six, no person shall be permitted to act as mine foreman, unless he is registered as a holder of a certificate under this act.

438. Certificates of qualification to mine foreman shall be granted by the Secretary of Internal Affairs to every applicant, who may be reported by the examiners, as hereinafter provided, as having passed a satisfactory examination, and as having given satisfactory evidence of at least five years practical experience, and of good conduct, capability and sobriety.

The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in his department.

439. For the purpose of examination of candidates for such certificates, a board of examiners shall be appointed in each of the inspection districts provided for by this act. The said board shall consist of the district inspector of mines, a practical miner and one owner, operator or superintendent of a mine. The said inspector shall act *ex officio*, and the said engineer and owner, operator or superintendent shall be appointed in like manner, and at the same time, as the boards of examiners for candidates for mine inspectorship under this act are now appointed. The said board shall act as such for the period of one year from the date of their appointment. Meetings of the board may be held at any time, and they may make such rules and conduct such examinations as in their judgment may seem proper for the purpose of such examinations. The said board shall report their action to the Secretary of Internal Affairs, and at least two of the members thereof shall certify to the qualification of each candidate who has passed such examination. \* \* \* \* \*

440. No mine shall be operated for a longer period than thirty (30) days without the supervision of a mine foreman: *Provided, however*, That any mine employing ordinarily less than ten (10) persons under ground, or one whose daily output is less than fifty (50) tons of coal, shall be exempt from the operations of this section.

## ARTICLE IX.

### EMPLOYMENT OF BOYS AND FEMALES.

441. No boy under the age of fourteen years, and no woman or girl of any age, shall be employed or permitted to be in any mine for the purpose of employment therein; nor shall a boy under the age of twelve years, or a woman, or girl of any age, be employed or permitted to be in or about the outside structures or workings of a colliery for the purpose of employment, but it is provided, however, that this prohibition shall not affect the employment of a boy or female of suitable age in an office, or in the performance of clerical work at a colliery.

442. When an employer is in doubt as to the age of any boy or youth applying for employment in or about a mine or colliery, he shall demand and receive proof of the said lawful employment age of such boy or

30 June, 1886, § 2.

Certificates of qualification to be granted by secretary of internal affairs.

After examination. After five years' service, &c.

Form of certificate.

Record to be kept.

*Ibid*, § 2.

Board of examiners to be appointed in each district.

Number and qualifications of board.

Appointment.

Term.

Meetings.

Report.

*Ibid*, § 6.

Mines not to be operated without foremen.

*Proviso*.

Art. IX, § 1.

Boys under a certain age, and all females not to be employed about mines.

Except for office or clerical work.

*Ibid*, § 2.

How age of applicant is to be determined.

30 June, 1885.

*Ibid.*, § 2.

Penalty for violation of this provision.

youth by certificate from the parent or guardian, before said boy or youth shall be employed.

**443.** If any person or persons contravene, or fail to comply with the provisions of this act in respect to the employment of boys, young male persons, or females, or if he or they shall connive with, or permit others to contravene or fail to comply with said provisions, or if a parent or guardian of a boy or young male person, make or give a false certificate of the age of such boy or young male person, or knowingly do or perform any other act for the purpose of securing employment for a boy or young male person under the lawful employment age and in contravention of the provisions of this act, he or they shall be guilty of an offense against this act.

## ARTICLE X.

### VENTILATION.

*Art. X.*, § 1.

Ventilation to be provided.

*Ibid.*, § 2.

Furnaces prohibited in certain mines.

*Ibid.*, § 3.

Minimum quantity of air to be produced.

*Ibid.*, § 4.

How ventilating currents are to be conducted, &c.

*Ibid.*, § 5.

Abandoned mines to be kept free of gases.

*Ibid.*, § 7.

When mines are to be divided into districts.

Each district to have a separate split of pure air, &c.

Separation of air passages.

*Ibid.*, § 7.

Area of air passages.

**444.** The owner, operator or superintendent of every mine shall provide and maintain an adequate supply of pure air for the same, as hereinafter provided.

**445.** At the expiration of one year from and after the passage of this act, it shall not be lawful to use a furnace for the purpose of ventilating any mine wherein explosive gases are generated.

**446.** The minimum quantity of air thus produced shall not be less than two hundred (200) cubic feet per minute, for each and every person employed in any mine, and as much more as the circumstances may require.

**447.** The ventilating currents shall be conducted and circulated to and along the face of each and every working place throughout the entire mine, in sufficient quantities to dilute, render harmless and sweep away smoke and noxious or dangerous gases, to such an extent that all working places and traveling roads shall be in a safe and fit state to work and travel therein.

**448.** All worked out or abandoned parts of a mine, so far as practicable, shall be kept free of dangerous bodies of gases.

**449.** One year after the passage of this act, every mine employing more than seventy-five (75) persons must be divided into two or more districts; each district shall be provided with a separate split of pure air, and the ventilation shall be so arranged that no more than seventy-five (75) persons shall be employed at the same time in any one current or split of air.

The inlet and return air passages for any particular district must be separated by a pillar of coal or stone, if the thickness and dip of the vein will permit, except where it is necessary to cut through said dividing pillar for the purpose of ventilation, traffic or drainage.

**450.** All of the air passages shall be of a sufficient area to allow the free passage of not less than two hundred (200) cubic feet of air per minute for every per-

son working therein, and in no case, in mines generating explosive gases, shall the velocity exceed four hundred and fifty (450) lineal feet per minute in any opening, through which the air currents pass, if gauze safety lamps are used, except in the main inlet or outlet airways.

30 June, 1895,  
Velocity.

451. All cross cuts, connecting the main inlet and outlet air passages of every district, when it becomes necessary to close them permanently, shall be substantially closed with brick or other suitable building material, laid in mortar, or cement wherever practicable, but in no case shall said air stoppings be constructed of plank, except for temporary purposes, or as above provided.

Ibid., § 8.  
Cross cuts to be closed.

452. All doors used in assisting or in any way affecting the ventilation shall be so hung and adjusted, that they will close of their own accord and cannot stand open.

Ibid., § 9.  
Doors.

453. All main doors shall have an attendant, whose constant duty it shall be to open them for transportation and travel and prevent them from standing open, longer than is necessary for persons or cars to pass through.

Ibid., § 10.  
Main doors to be attended to.

454. All main doors shall be so placed that when one door is open, another, which has the same effect upon the same current, shall be and remain closed, and thus prevent any temporary stoppage of the air current.

Ibid., § 11.  
How main doors are to be placed.

455. An extra main door shall be placed and kept standing open so as to be out of reach of accident, and so fixed that it can be at once closed in the event of an accident to the doors in use.

Ibid., § 12.  
Extra main doors.

456. The frame work of such main doors shall be substantially secured in stone or brick laid in mortar or cement, unless otherwise permitted in writing by the inspector.

Ibid., § 13.  
Frame work of main doors.

457. All permanent air bridges shall be substantially built of such material and of such strength as the circumstances may require.

Ibid., § 14.  
Air bridges.

458. The quantities of air in circulation shall be ascertained with an anemometer or other efficient instrument. Such measurements shall be made by the inside foreman, or his assistant, once every week at the inlet and outlet airways; also at or near the face of each gangway, and shall be entered in the colliery report book.

Ibid., § 15.  
Air measurements.  
By whom to be made.  
Recorded.

459. A copy of these air measurements shall be sent to the inspector before the twelfth (12) day of each month for the preceding month, together with a statement of the number of persons employed in each district.

Ibid., § 16.  
Copies to be sent to the inspector.

460. All ventilators used at mines generating explosive gases shall be provided with recording instruments by which the number of revolutions of the fan shall be registered for each hour, and such data shall be taken and reported in the colliery report book.

Ibid., § 17.  
Recording instruments.



30 June, 1885, § 18.

Penalty for violation of this article.

**461.** Any person or persons who shall neglect or fail to comply with the provisions of this article, or who shall knowingly make any false report in regard to air measurements shall be guilty of an offense against this act.

The defendant's mine, at the point where workings are going on, is free from standing gas; but these workings connect with and open into old abandoned workings, where standing gas accumulates, flows, and by frequent falling of the roof is liable to be driven into the defendant's workings, to affect the air and to cause destructive explosions: Held, That under these circumstances "the entire mine is not free from danger to the lives and health of the men," nor in a fit state for them to work therein, as required by the ventilation act (3d March, 1870, P. L., 3), and an injunction was awarded.

A mine is not free from danger when it actually exists within the mine simply because the danger originates in causes located a few feet or yards beyond and outside of the boundary lines. The act deals with its presence, not its origin. The act does not require that a mine be kept absolutely clear of gas, for this is impossible; but as fast as evolved it is, by the introduction of pure air and the process of ventilation, "diluted, rendered harmless and expelled," and its accumulation as, and so as to fall within the designation of, "standing gas" avoided.—*Cwlth. v. Tompkins*, 1 Luz. Leg. Reg., 341.

## ARTICLE XI.

### PROPS AND TIMBERS.

Art XI, § 1.

Props and timbers to be furnished the miners at their request.

**462.** It shall be the duty of the owner, operator, superintendent or mine foreman of every mine to furnish to the miners, at their request, all props and timbers necessary for the safe mining of coal and for the protection of the lives of the workmen. Such props and timbers shall be suitably prepared and shall be delivered to the workmen, as near to their working places as they can be conveyed in ordinary mine cars, free of charge.

*Ibid*, § 2.

Mine foreman to be so notified.

When work may stop for want of props, &c.

**463.** Every workman in want of props or timbers shall notify the mine foreman, or his assistant, of the fact at least one day in advance, giving the length of the props or timber required, and in case of danger from loose roof or sides he shall not continue to cut or load coal until the said props and timber have been properly furnished and the place made secure.\*

## ARTICLE XII.

### GENERAL RULES.

General rules.

**464.** The following general rules shall be observed in every mine to which this act applies:

Mine to be in charge of the mine foreman.

*Rule 1.* The owner, operator or superintendent of a mine or colliery shall place the underground workings thereof and all that is related to the same under the charge and daily supervision of a competent person, who shall be called "mine foreman."

\*In order to make out a criminal offense against the statute for non-furnishing of props, etc., it must be shown that a specific demand had been made at least one day in advance, giving the length of the props or timber required. A general demand by a committee of workmen, and a refusal generally to cut and prepare, is not sufficient. *Cwlth. v. Richmond*, 2 Com. Pleas Reporter, 189.

**Rule 2.** Whenever a mine foreman cannot personally carry out the provisions of this act so far as they pertain to him, the owner, operator or superintendent shall authorize him to employ a sufficient number of competent persons to act as his assistants, who shall be subject to his orders.

30 June, 1886.

Assistants.

**Rule 3.** The mine foreman shall have charge of all matters pertaining to ventilation, and the speed of the ventilators shall be particularly under his charge and direction.

Charge of ventilation.

**Rule 4.** All accessible parts of an abandoned portion of a mine, in which explosive gases have been found, shall be carefully examined by the mine foreman, or his assistants, at least once every week, and all danger found existing therein shall be immediately removed. A report of said examination shall be recorded in a book kept at the colliery for that purpose and signed by the person making the same.

Abandoned mines to be examined.

And report thereof recorded.

**Rule 5.** In mines generating explosive gases, the mine foreman or his assistants shall make a careful examination every morning of all working places and traveling roads before the workmen shall enter the mine, and such examination shall be made with a safety lamp within three hours at most before time for commencing work, and a workman shall not enter the mine or his working place until the said mine or part thereof and working place are reported to be safe. Every report shall be recorded without delay in a book, which shall be kept at the colliery for the purpose, and shall be signed by the person making the examination.

Examination of mines generating gases.

**Rule 6.** The person who makes said examination shall establish proof of the same by marking plainly the date thereof at the face of each working place.

Proof to be marked.

**Rule 7.** A station or stations shall be established at the entrance to each mine, or different parts of each mine as the case may require, and a workman shall not pass beyond any such station, until the mine or part of the mine beyond the same has been inspected and reported to be safe.

Stations to be established.

**Rule 8.** \*If at any time it is found by the person for the time being in charge of the mine, or any part thereof, that, by reason of noxious gases prevailing in such mine, or such part thereof, or of any cause whatever, the mine or the said part is dangerous, every workman, except such persons as may be required to remove the danger, shall be withdrawn from the mine, or such part thereof as is so found dangerous, until the said mine, or said part thereof, is examined by a competent person and reported by him to be safe.

When noxious gases are found, workmen to be withdrawn.

\* Under rule 8, Art. XII, act 30 June, 1886, if by reason of noxious gases, or of any cause whatever, an anthracite coal mine has become dangerous, it is the duty of the mine foreman to compel every workman to retire from the mine and to remain out until after a proper examination of its condition has been made. Failure to do this is negligence and a disobedience of the law.—Commonwealth v. Coonrad, 14 Luzerne Leg. Reg., 311.

20 June, 1886.  
Safety lamps only  
to be used in cer-  
tain mines.

*Rule 9.* In every working approaching any place where there is likely to be an accumulation of explosive gases, or in any working in which danger is imminent from explosive gases, no light or fire, other than a locked safety lamp, shall be allowed or used. Whenever safety lamps are required in any mine, they shall be the property of the owner of said mine, and a competent person, who shall be appointed for the purpose, shall examine every safety lamp immediately before it is taken into the workings for use and ascertain it to be clean, safe and securely locked, and safety lamps shall not be used until they have been so examined and found safe, clean and securely locked, unless permission be first given by the mine foreman to have the lamps used unlocked.

**Keys.**

*Rule 10.* No one, except a duly authorized person, shall have in his possession a key, or any other contrivance, for the purpose of unlocking any safety lamp in any mine where locked safety lamps are used. No lucifer matches or any other apparatus for striking light shall be taken into said mine or parts thereof.

**Blasts.**

*Rule 11.* No blast shall be fired in any mine where locked safety lamps are used, except by permission of the mine foreman or his assistant, and before a blast is fired, the person in charge must examine the place and adjoining places and satisfy himself that it is safe to fire such blast before such permission is given.

**Visitations of  
mines.**

*Rule 12.* The mine foreman, or his assistant, shall visit and examine every working place in the mine at least once every alternate day, while the men of such place are or should be at work, and shall direct that each and every working place is properly secured by props or timber, and that safety in all respects is assured by directing that all loose coal or rock shall be pulled down or secured, and that no person shall be permitted to work in an unsafe place, unless it be for the purpose of making it secure.

**Examination of  
slopes, &c.**

*Rule 13.* The mine foreman, or some other competent person or persons to be designated by him, shall examine at least once every day all slopes, shafts, main roads, traveling ways, signal apparatus, pulleys and timbering, and see that they are in safe and efficient working condition.

**Roofs and sides to  
be secured.**

*Rule 14.* Any person having charge of a working place in any mine shall keep the roof and sides thereof properly secured by timber, or otherwise, so as to prevent such roof and sides from falling, and he shall not do any work or permit any work to be done under loose or dangerous material, except for the purpose of securing the same.

**Danger from water.**

*Rule 15.* Whenever a place is likely to contain a dangerous accumulation of water, the working approaching such place shall not exceed twelve (12) feet in width, and there shall be constantly kept, at a distance of not less than twenty (20) feet in advance, at

least one bore hole near the centre of the working and sufficient flank bore holes on each side.

30 June, 1885.

*Rule 16.* No person shall ride upon or against any loaded car, cage or gunboat in any shaft, slope or plane in or about a mine or colliery.

Riding on loaded cars.

*Rule 17.* Not more than ten (10) persons shall be hoisted or lowered at any one time in any shaft or slope, and whenever ten persons shall arrive at the bottom of any shaft or slope in which persons are regularly hoisted or lowered, they shall be furnished with an empty car or cage and be hoisted, except however in mines where there is provided a traveling way having an average pitch of fifteen degrees ( $15^{\circ}$ ) or less and not more than one thousand feet in length.

Number of persons to be hoisted or lowered at one time.

*Rule 18.* An engineer placed in charge of an engine, whereby persons are hoisted or lowered in any mine, shall be a sober and competent person of not less than twenty-one (21) years of age.

Qualifications of engineer.

*Rule 19.* Every engineer shall work his engine slowly and with great care when any person is being lowered or hoisted in a shaft or slope, and no one shall interfere with or intimidate him while in the discharge of his duties.

Working of engine.

*Rule 20.* An engineer, who has charge of the hoisting machinery by which persons are lowered or hoisted in a mine, shall be in constant attendance for that purpose during the whole time any person or persons are below ground, and he shall not allow any person or persons, except such as may be deputed by the owner, operator or superintendent, to handle or meddle with the engine under his charge or any part of its machinery.

Duty of the engineer in charge of the hoisting machinery.

*Rule 21.* When any person is about to descend or ascend a shaft or slope, the headman or footman, as the case may be, shall inform the engineer by signal or otherwise of the fact, and the engineer shall return a signal before moving or starting the engine. In the absence of a headman or footman, the person or persons about to descend or ascend shall give and receive the signals in the same manner.

Signals.

*Rule 22.* The owner, operator or superintendent of a colliery shall place a competent person, to be called outside foreman, in charge of the breaker and the outside work of such colliery, and who shall direct, and, as far as practicable, see that the provisions of this act are complied with in respect to the breaker, outside machinery, ropes, cages and all other things pertaining to the outside work, unless otherwise provided for in this act.

Outside foreman.

*Rule 23.* In all coal breakers, where the coal dust is so dense as to be injurious to the health of persons employed therein, the owner, operator or superintendent of said breaker shall, upon the request of the inspector, immediately adopt measures for the removal of the dust, as far as practicable.

Dirt in coal breakers.

30 June, 1885.

Injuries to ventilating current, roof, &c., to be reported.

*Rule 24.* Any miner, or other workman, who shall discover anything wrong with the ventilating current, or with the condition of the roof, sides, timber or roadway, or with any other part of the mine, in general, such as would lead him to suspect danger to himself, or to his fellow-workmen, or to the property of his employer, shall immediately report the same to the mine foreman, or other person for the time being in charge of that portion of the mine.

Willful damage to mine or equipments thereof.

*Rule 25.* Any person or persons who shall knowingly or wilfully damage, or without proper authority remove, or render useless any fencing, means of signaling, apparatus, instrument or machine, or shall throw open or obstruct any airway, or open a ventilating door and not have the same closed, or enter a place in or about a mine against caution, or carry fire, open lights or matches in places where safety lamps are used, or handle without authority, or disturb any machinery or cars, or do any other act or thing, whereby the lives or health of persons, or the security of the property in or about a mine or colliery are endangered, shall be guilty of an offense against this act.

Explosives.

*Rule 26.* Gunpowder, or any other explosive, shall not be stored in a mine, and a workman shall not have at any one time in any one place more than one keg or box containing twenty-five (25) pounds, unless more is necessary for a person to accomplish one day's work.

How to be kept.

*Rule 27.* Every person who has gunpowder, or other explosive in a mine, shall keep it in a wooden or metallic box securely locked, and such box shall be kept at least ten feet from the tracks, in all cases where room at such distance is available.

And handled.

*Rule 28.* Whenever a workman shall open a box containing explosives, or while in any manner handling the same, he shall first place his lamp not less than five feet from such explosive and in such a position that the air current cannot convey sparks to it, and a workman shall not approach nearer than five feet to an open box containing powder, with a lighted lamp, lighted pipe or any other thing containing fire.

To be stored, &c., in accordance with special rules.

*Rule 29.* When high explosives, other than gunpowder, are used in any mine, the manner of storing, keeping, moving, charging and firing, or in any manner using such explosives, shall be in accordance with special rules, as furnished by the manufactures of the same. The said rules shall be endorsed with his or their official signature, and shall be approved by the owner, operator or superintendent of the mine in which such explosives are used.

Rules to be approved by owner of mine.

Needle.

*Rule 30.* In charging holes for blasting in slate or rock in any mine, no iron or steel pointed needle shall be used, and a tight cartridge shall not be rammed into a hole in coal, slate or rock with an iron or steel tamping bar, unless the end of the tamping bar is tipped with at least six (6) inches of copper, or other soft metal.

Tamping bar.

*Rule 31.* A charge of powder, or any other explosive, in slate or rock, which has missed fire, shall not be withdrawn or the hole re-opened.

30 June, 1935.  
Missed-charge.

*Rule 32.* A miner, or other person who is about to explode a blast by the use of a patent, or other squibs, or matches, shall not shorten the match, nor saturate it with mineral oil, nor turn it down when placed in the hole, nor ignite it except at its extreme end, nor do anything tending to shorten the time the match will burn.

Match.

*Rule 33.* When a workman is about to fire a blast, he shall be careful to notify all persons, who may be in danger therefrom, and shall give sufficient alarm, so that any person or persons, who may be approaching, shall be warned of the danger.

Notice of blast.

*Rule 34.* Before commencing work, and also after the firing of every blast, the miner, working a breast or any other place in a mine, shall enter such breast or place to examine and ascertain its condition, and his laborer or assistant shall not go to the face of such breast or place until the miner has examined the same and found it to be safe.

Examinations after each blast.

*Rule 35.* No person shall be employed to blast coal or rock, unless the mine foreman is satisfied that such person is qualified by experience and judgment to perform the work with ordinary safety.

Qualifications of blaster.

*Rule 36.* A person who is not a practical miner shall not charge or fire a blast in the absence of an experienced miner, unless he has given satisfactory evidence of his ability to do so with safety and has obtained permission from the mine foreman or person in charge.

Inexperienced blaster not to be employed.

*Rule 37.* An accumulation of gas in mines shall not be removed by brushing, where it is practicable to remove it by brattice.

Accumulation of gas.

*Rule 38.* When gas is ignited by blast or otherwise, the person igniting the same shall immediately extinguish it, if possible, and notify the mine foreman or his assistant of the fact, and workmen must see that no gas blowers are left burning upon leaving their working places.

Ignited gas to be extinguished.

*Rule 39.* Every fireman in charge of a boiler or boilers for the generation of steam shall keep a constant watch of the same; he shall see that the steam pressure does not at any time exceed the limit allowed by the outside foreman or superintendent; he shall frequently try the safety valve and shall not increase the weight on the same; he shall maintain a proper depth of water in each boiler, and if anything should happen to prevent this, he shall report the same without delay to the foreman for the time being in charge, and take such other action as may, under the particular circumstances, be necessary for the protection of life and preservation of property.

Duties of fireman in charge of boilers.

*Rule 40.* At every shaft or slope, in which provision is made in this act for lowering and hoisting persons, a

Headman and footman.

30 June, 1835.

## Their duties.

headman and footman shall be designated by the superintendent or foreman to be at their proper places from the time that persons begin to descend until all the persons, who may be at the bottom of said shaft or slope when quitting work, shall be hoisted. Such headman and footman shall personally attend to the signals, and see that the provisions of this act, in respect to lowering and hoisting persons in shafts or slopes, shall be complied with.

## Jumping on cars prohibited.

*Rule 41.* No person, except the man giving the signal, shall jump on a car, cage or gunboat after the signal to start has been given, and if any person should enter a car, cage or gunboat in excess of the lawful number, the headman or footman shall notify him of the fact and request him to get off, which request must be immediately complied with. Any violation of this rule must be reported promptly to the mine foreman.

## Construction of passage way.

*Rule 42.* Every passage way, used by persons in any mine and also used for transportation of coal or other material, shall be made of sufficient width to permit persons to pass moving cars with safety, but if found impracticable to make any passage way of sufficient width, then safety holes of ample dimensions and not more than one hundred and fifty feet apart shall be made on one side of said passage way. The said passage way and safety holes shall be kept free from obstructions and shall be well drained, the roof and sides of the same shall be made secure.

## Speed of locomotives.

*Rule 43.* When locomotives are used in any mine their speed shall not be exceed six miles per hour, and an efficient alarm shall be provided and attached to the front end of every train of cars pushed by a locomotive in any mine or part of a mine.

## Use of locomotives in certain passage ways prohibited.

*Rule 44.* Locomotives propelled by steam, if using fire, shall not be used in any passage way, which is also used as an in-take air way to any mine or part of a mine where persons are employed, unless there be a sufficient quantity of air circulating therein to maintain a healthy atmosphere.

## Coupling of cars.

*Rule 45.* No person, except the driver and helper, shall couple or uncouple loaded or empty cars while the same are in motion.

## Use and construction of cars for gravity roads.

*Rule 46.* When cars are run on gravity roads by brakes or sprags, the runner shall ride only on the rear end of the last car; and when said cars are run by sprags, a space of not less than two feet from the body of the car shall be made on one or both sides of the track, whenever it may be necessary for the runner to pass along the side of the moving car or cars, and said space or passage way shall always be kept free from obstruction.

## Runners, and their qualifications.

*Rule 47.* No person shall run cars on gravity roads, or act as a driver or runner, or sprag any mine car after it has been started from the face of a chamber, unless he is authorized to do so by the mine foreman or his as-

sistant, and all runners engaged in any mine or part of a mine must have attained the age of fifteen (15) years.

20 June, 1885.

*Rule 48.* When deemed necessary by the mine inspector and upon his request in writing to the owner, operator or superintendent, safety holes shall be made at the bottom of all slopes and planes, and shall be kept free from obstruction, to enable the footman to escape readily in case of danger.

Safety holes.

*Rule 49.* Safety blocks, or some other device for the purpose of preventing cars from falling into a shaft, or running away on a slope or plane, shall be placed at or near the head of every shaft, slope or plane, and said safety blocks or other device must be maintained in good working order.

Safety blocks.

*Rule 50.* No person shall travel on any gravity plane while cars are being hoisted or lowered thereon. Whenever ten persons arrive at the bottom or top of any plane on which it is necessary for men to travel, traffic thereon shall be suspended for a period of time long enough to permit them to reach the top or bottom of said plane.

Travel on gravity roads prohibited.  
When traffic thereon to be suspended.

*Rule 51.* From and after the passage of this act, no mine car shall be built or reconstructed for use in any mine, unless the bumpers are of sufficient length and width to keep the bodies of said cars separated by not less than twelve (12) inches when the cars stand on a straight level road and the bumpers touch each other, and five years after the passage of this act, no mine car shall be used in any mine unless it complies with the above conditions.

Construction of mine cars regulated.

*Rule 52.* Every person who wilfully or negligently acts in contravention of, or fails to comply with, any of the foregoing rules, or any of the provisions of this article shall be guilty of an offense against this act.

Penalty for violation of this article.

## ARTICLE XIII.

### PROVISION FOR SPECIAL RULES.

**465.** [This article permits the establishment of special rules for particular mines to be signed by the district inspector and approved by the county court.]

Special rules to be established.

## ARTICLE XIV.

### INQUESTS.

**466.** [Provides for prompt notice to inspectors of loss of life to miners: and in such case or when the lives of those employed in a mine are in danger, the inspector shall at once visit the scene of the accident, and, if necessary, shall notify the coroner, and shall make a record of all such accidents.]



## ARTICLE XV.

## RETURNS, NOTICES, &amp;C.

30 June, 1885, Art.  
XV, § 1.

Notices of deaths,  
&c., to be sent to  
inspector.

Ibid, § 2.

Other notices to be  
given.

Removal of pillars.

Crush, fire, gas, &c.

**467.** Notices of deaths, or serious injuries resulting from accident in or about mines or collieries, shall be made to the inspector of mines in writing, and shall specify the name, age and occupation of the person killed or injured, and also the nature and character of the accident and of the injury caused thereby.

**468.** The owner, operator or superintendent of a mine or colliery shall, within two weeks, give notice to the inspector of the district in which said mine or colliery is situated in any or all of the following cases : \*

\* \* \* \*

*Fifth.* Where the pillars of a mine are about to be removed or robbed.

*Sixth.* Where a squeeze, or crush, or any other cause, or change may seem to affect the safety of persons employed in any mine, or where fire occurs, or a dangerous body of gas is found in any mine. \* \* \*

## ARTICLE XVI.

## INJUNCTIONS.

Courts may restrain  
the working of  
mines.

**469.** [Upon the application of the district inspector, courts may restrain by injunction the working of any mine in which any person is employed in contravention of the provisions of this act.]

## ARTICLE XVII.

## ARBITRATION.

Art. XVII, § 1.

When arbitration  
may be had.

**470.** Whenever an inspector finds any mine or colliery, or any part thereof, or any matter, thing or practise connected with such mine, which, in any respect thereof, is not covered by or provided against by any provision of this act, or by any special rule, to be dangerous or defective, or in his judgment tends to bodily injury to a person, he shall give notice thereof in writing to the owner, operator or superintendent of such mine or colliery, stating in such notice the particular matter or defect requiring remedy, and may demand that the same be remedied, but the owner, operator or superintendent of said mine or colliery shall have the right to refer the demand of the inspector to a board of arbitration, and the matter shall then be arbitrated within forty-eight (48) hours of the time such complaint or demand be made. The said board of arbitration shall be composed of three persons, one of whom shall be chosen by the inspector, one by the said owner, operator or superintendent and the third by the two thus selected, and the decision of a majority of such board shall be final and binding in the matter.

How arbitrators  
are to be chosen.

Decision to be final.

## ARTICLE XVIII.

## PENALTIES.

471. [The owner, operator, superintendent, or any person employed in or about a mine guilty of a wilful or negligent violation of this act whereby a dangerous accident has, or might have, resulted is liable to a fine of fifty dollars or three months' imprisonment.]

30 June, 1885, Art.  
XVIII, § 1.

472. Nothing in this act shall prevent any person from being indicted or liable under any other act to any higher penalty or punishment than is herein provided, and if the court before whom any such proceedings is had shall be of the opinion that proceedings ought to be taken against such persons under any other act or otherwise, he may adjourn the case to enable the proceedings to be taken.

Ibid, § 2.

Trial before judge,  
not a bar to indictment, &c.

473. All offenses under this act are declared to be misdemeanors, and in default of payment of any penalty or costs by the party or parties sentenced to pay the same, he or they may be imprisoned for a period not exceeding three months and not less than thirty days.

Ibid, § 4.

Offenses under this  
act declared misdemeanors, and penalties prescribed.

474. [An inspector who violates this act is guilty of a misdemeanor, and is liable to a fine of five hundred dollars and to removal from office by the sentence of the court.]

Ibid, § 5.

Penalty on violation of act by any inspector.

475. For any injury to persons or property occasioned by any violation of this act, or any wilful failure to comply with its provisions, by any owner, operator or superintendent of any coal mine or colliery, or any other person, a right of action shall accrue to the party injured for any direct damages he may have sustained thereby, and, in case of loss of life by reason of such wilful neglect or failure aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost for like recovery of damages for the injury they shall have sustained.

Ibid, § 8.

Damages may be collected from owners, &c., for injuries, &c.

Right of action.

## CHAPTER XIX.

## DEFINITION OF TERMS.

476. In this act, unless the context otherwise requires, the term "coal mine or colliery" includes every operation and work, both under ground and above ground, used or to be used for the purpose of mining and preparing coal.

"Coal mine or colliery."

The term "workings" includes all the excavated parts of a mine, those abandoned as well as the places actually at work.

"Workings."

The term "mine" includes all underground workings and excavations and shafts, tunnels and other ways and openings; also all such shafts, slopes, tunnels and other openings in the course of being sunk or driven, together with all roads, appliances, machinery and materials connected with the same below the surface.

"Mine."

30 June, 1883.

"Shafts."

The term "shaft" means a vertical opening through the strata, and which is or may be used for the purpose of ventilation or drainage or for hoisting men or material in connection with the mining of coal.

"Slope."

The term "slope" means any inclined way or opening used for the same purpose as a shaft.

"Breaker."

The term "breaker" means the structure containing the machinery used for the preparation of coal.

"Owners" and  
"Operators."

The term "owners" and "operators" means any person or body corporate who is the immediate proprietor, or lessee, or occupier of any coal mine or colliery, or any part thereof. The term "owner" does not include a person or body corporate who merely receive a royalty, rent or fine from a coal mine or colliery, or part thereof, or is merely the proprietor of a mine, subject to any lease, grant or license for the working or operating thereof, or is merely the owner of the soil and not interested in the minerals of the mine, or any part thereof. But any "contractor" for the working or operating of a mine or colliery, or of any part or district thereof, shall be subject to this act as an operator or owner, in like manner as if he was the owner.

"Superintendent."

The term "superintendent" means the person who shall have, on behalf of the owners, general supervision of one or more mines or collieries.

## XVII. WEATHER BUREAU.

13 May, 1887, § 1.  
P. L. 106  
P. D 2413.

Competent observers to be appointed in each county, on the recommendation of the Franklin Institute.

Duties of such observers.

Secretary of Internal Affairs to furnish instruments, &c.

Ibid, § 2.

Central office to be located at Philadelphia.

**477.** The Secretary of Internal Affairs of this Commonwealth be and is hereby authorized and directed to name and appoint, on the recommendation of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts, one or more competent observers in each county of the State for the purpose of taking, recording and transmitting observations of the atmospheric pressure, temperature, humidity, rainfall, wind, and other meteorological phenomena, occurring in their respective localities; and the Secretary of Internal Affairs is hereby authorized and directed to purchase and furnish to each of said observers such standard meteorological instruments, as are used by the United States Signal Service, and such signal flags and other necessary equipments, and such necessary clerical expenses, as shall be designated and approved by the said Franklin Institute.

**478.** The central office of the State Weather Service shall be located in the city of Philadelphia, at which the weather forecasts and warnings of the United States Signal Service shall be received, and from which the same shall be disseminated throughout the State, and to which the State Weather Service observers shall send their observations.

**479.** The management of the Pennsylvania State Weather Service shall be under the supervision and direction of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts, and the said Franklin Institute is hereby authorized to make such use of the information thus collected by the publication of a weather review, and by other proper means as will best promote the usefulness of the service to the citizens of the State. And the services of the said Franklin Institute and of the said observers of the State weather service shall be made without compensation.

12 May, 1887, § 3.

State weather service under charge of the Franklin Institute.

Information to be published.

All services to be without compensation.



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## APPENDIX K.

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### MISCELLANEOUS CORRESPONDENCE.

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- I. Letter advisory to the Councils of the city of New Castle, Benjamin Lee, M. D., Secretary.
- II. Correspondence in relation to the origin of a case of small-pox in Pittsburgh,
  - A. Crosby Gray, Health Officer of Pittsburgh.
  - B. Rev. Hilary Pfrængle, Director of St. Vincent College.
- III. Correspondence in reference to the coöperation of the clerical profession in sanitary education.
- IV. Letter of Health Officer O'Malley, of Scranton, in regard to bone-boiling establishments outside of the city limits.
- V. Letter of the Secretary in reference to the drainage of the Schooley shaft, Luzerne county.
- VI. Correspondence relative to regulations for the transportation of dead bodies in the different States of the Union.—Dr. J. F. Edwards.
  - A. Letter of Dr. J. F. Edwards, Chairman of the Committee on Preventable Diseases and the Supervision of Travel and Traffic, addressed to Secretaries of State Boards of Health.
  - B. Replies to Dr. Edwards' circular letter.
    - a. Alabama.
    - b. California.
    - c. Connecticut.
    - d. Delaware.
    - e. Indiana.
    - f. Iowa.
    - g. Kansas.
    - h. Kentucky.
    - i. Louisiana.
    - j. Maine.
    - k. Massachusetts.
    - l. Michigan.
    - m. Missouri.
    - n. New Hampshire.
    - o. New Jersey.
    - p. New York.
    - q. Ohio.
    - r. Tennessee.
    - s. Rhode Island.
    - t. Wisconsin.

I. LETTER ADVISORY TO THE COUNCILS OF THE CITY OF NEW CASTLE, BY BENJAMIN LEE, SECRETARY.

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COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 1532 PINE ST..  
PHILADELPHIA, Sept. 10th, 1886.

*To the Honorable the Mayor and Councils of the City of New Castle :*

GENTLEMEN: The attention of the State Board of Health having been called to the fact that the sewerage system of your city is still in an improper condition and liable to become a cause of disease to your citizens, if not already so, an inspector was sent on the 2d of September to examine and report. He declares the presence of "stagnant, filthy water on Cochran alley and South street for a distance of about two hundred and fifty feet in a thickly populated portion of the city to be a terrible nuisance and one which should certainly be abated at once." In accordance with this finding the Board recommends that no time be lost in constructing a permanent and effective sewer which will drain the condemned locality in Shenango Creek.

No community can long be prosperous whose authorities neglect the grave duty of protecting the health of its residents. To allow the question of expense to interfere with the undertakings of this nature is to be "penny wise and pound foolish." The life of a city is not limited as is that of an individual, and what posterity is to benefit by, posterity can well afford to pay for. If, therefore, there is not money in the treasury to perfect the excellent system of sewerage already planned, it will be the part of wise and prudent statesmanship to issue bonds for the purpose. No corporation can be expected to pay out of pocket for the construction of great public works, while a loan, issued for the public good, upon such terms that all can be directly interested in it, is one of the strongest elements of security in a community. The Board makes these suggestions because its observation convinces it that many municipal legislators, in their honest desire to avoid extravagance in the expenditure of the sums entrusted to their care, err on the side of false economy, which in the long run is always wasteful. It trusts that it will not be necessary to do more, and that the intelligence and public spirit of your honorable bodies will lead to the adoption of speedy and effective measures for the abatement of this nuisance.

Yours very respectfully,

BENJ. LEE, M. D.,  
*Secretary and Executive Officer.*

**II. LETTERS IN REGARD TO ORIGIN OF A CASE OF SMALL POX  
DISCOVERED IN PITTSBURGH.**

A. Crosby Gray, Esq., Health Officer of Pittsburgh.

B. Rev. Hilary Pfrængle, Director of St. Vincent's College.

PITTSBURGH, *November 24, 1886.*

Dr. BENJAMIN LEE, *Secretary State Board of Health :*

DEAR DOCTOR : As per promise of yesterday, I submit herewith a brief statement relative to case of small-pox referred to.

Some three weeks ago Frank Ries, aged 23 years, residing in basement on first floor of house No. 84 Van Braam street, Sixth ward, this city, in company with a friend, left for the hills of Westmoreland county upon a hunting expedition. Two or three nights were spent in the wood. One other, and probably the last one out, was spent in the stable attached to St. Vincent Abbey, or Monastery, located near Beatty's station on the Pennsylvania Railroad. An improvised bed was made of straw taken from the "mow," the covering consisting of two or three blankets kindly furnished by the person in charge. On Saturday, November 13th, they returned home. A few days later Mr. Ries was taken ill, and Dr. A. E. Heuser, of 488 Fifth avenue, was called in attendance. On Monday, November 22d, Dr. Heuser reported to this office that Mr. Rees was suffering from what he believed to be an attack of small-pox, and requested that Dr. Snively be sent to see the patient. The request was complied with and the diagnosis of Dr. Heuser verified.

Upon being informed of the facts, I at once ordered the removal of the patient to the "Municipal Hospital," which removal was effected during the same evening. His wife, the only other member of the family, accompanied him to the hospital where she is engaged in nursing him. The infected bedding, clothing, &c., was removed and destroyed by fire, and the rooms occupied by the family thoroughly fumigated under the personal supervision of the Sanitary Inspector of the district in which the premises are located. The "vaccine physician" of the district was also promptly dispatched to the locality and is engaged in vaccinating all unprotected persons. The clinical history of the case being very complete, and the period elapsing between the time of stopping over night in the stable at the Monastery and the date of illness corresponding so nearly with the usual period of incubation of the disease, leads us to suspect that it may, in some manner, have been contracted while there.

Permit me to suggest that, in view of the circumstances as stated, it might be well to prosecute a further investigation relative to the suspected source of the disease.

Very respectfully yours,

CROSBY GRAY,  
*Health Officer.*



ST. VINCENT COLLEGE,  
WESTMORELAND Co., PA., Nov. 28, 1886.

BENJAMIN LEE, M. D.,

*Secretary State Board of Health, Philadelphia, Pa.:*

DEAR SIR: In reply to your kind favor of the 26th inst., I find, after considerable inquiry, that those two men who a few weeks ago were on a tenting expedition hereabouts, did receive lodgings in our barn. They begged one of the overseers to keep them over night, and he gave them straw and blankets. Said blankets have been in our possession, at this place, for years, and as there has not been, and is not now, any case of small-pox in this part of the country, the case in question can hardly have originated from the said blankets. However, we have used the precaution you suggested, and burned them. I must also add that those blankets had not since been used by any one.

Very respectfully yours,

HILARY PFRÄNGLE,  
*O. S. B., Director St. Vincent College.*

### III. CORRESPONDENCE IN REFERENCE TO THE CO-OPERATION OF THE CLERICAL PROFESSION IN SANTARY EDUCATION.

- A. Circular letter to the Bishops of the various Episcopal churches in Pennsylvania, the Secretary.
- B. Replies of Rt. Rev. Bishops.
  - 1. Rt. Rev. M. S. DeWolfe Howe, Bishop of Central Pennsylvania.
  - 2. Most Rev. P. J. Ryan, Archbishop of Philadelphia.
  - 3. Rt. Rev. W. O'Hara, Bishop of Scranton.
  - 4. Rt. Rev. Wm. Bacon Stevens, Bishop of Pennsylvania.
  - 5. Rt. Rev. W. F. Malalieu, Bishop of the M. E. Church.
- C. Circular letter to the clergy.

A

*March 28, 1886.*

TO THE RT. REVEREND ———,

REVEREND AND DEAR SIR: Allow me respectfully to ask your attention to the enclosed circulars. I desire to place one of each in the hands of every clergyman in your diocese. A brief note to accompany them, expressive of your approbation of the object, would greatly add to their effect. May I ask that you will kindly furnish me with such an endorsement, and at the same time a complete list of the clergy under your episcopal jurisdiction.

Yours with sincere esteem,

BENJAMIN LEE,  
*Secretary.*

B

"THE GABLES."

READING, CENTRAL PENNA., *April 21, 1886.*

TO BENJAMIN LEE, M. D.,

MY DEAR DOCTOR: I heartily approve the precautionary measures which you are adopting, to avoid a visitation on our borders of that fearful scourge the "Asiatic cholera." The clergy of this diocese I doubt not will lend you their hearty coöperation in bringing to the knowledge of the people, the precautions which you suggest.

I join you in invoking their sympathy and help.

Faithfully your friend,

M. A. DeWOLFE HOWE.

PHILADELPHIA, *April 7, 1886.*

BENJAMIN LEE, Esq.,

*Secretary of State Board of Health:*

MY DEAR SIR: In reply to your note, I beg to say that as far as my judgment in such matters can determine, the precautions suggested by your Board seem most opportune, and I heartily recommend their adoption in the institutions over which I have any control.

Your obedient servant,

† P. J. RYAN,

*Archbishop of Philadelphia.*

BENJAMIN LEE, *Secretary:*

DEAR SIR: I wish to say that I cheerfully concur in the purposes of the State Board of Health, as contained in the circular letter addressed to me, and I warmly recommend them to the clergy of my diocese. I am sure they will coöperate with your board in its humane efforts to instruct the people in the great benefits to be derived from correct sanitary observances.

W. O'HARA,

*Bishop of Scranton.*

SCRANTON, *April 16, 1886.*

PHILADELPHIA, *April 5, 1886.*

DEAR DR. LEE: The papers which you have sent to me are exceedingly valuable and deserve the careful attention of all thoughtful persons. Especially do I recommend them to the clergy, because public morals are so interlaced with the general principles of sanitation and cleanliness of person and surroundings, are so akin to purity of life, that whatever enlightens and instructs the people on the matter of public health, will indirectly advance the cause of pure and undefiled religion before God, and in the light of men.

I remain very truly yours,

WM. BACON STEVENS.

NEW YORK, N. Y., *November 2, 1886.*

BENJAMIN LEE, *Secretary :*

DEAR SIR: Yours of October 27 at hand. My pronounced conviction is, that the christianity of the immediate future must care more than ever for the bodies, as well as the souls of men; and, also, that one of its most important functions will be to prevent disease, as well as poverty, ignorance and sin.

Yours for the good work,

W. F. MALLALIEU.

C

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 313 S. FIFTEENTH STREET,  
PHILADELPHIA, *March 1, 1886.*

REVEREND AND DEAR SIR: The State Board of Health of the Commonwealth of Pennsylvania is desirous of securing all possible co-operation on the part of those who inhabit the Commonwealth, to enable it fully to perform the weighty duties with which the General Assembly has charged it.

Any and every class of intelligent persons, widely diffused through the State, can render valuable aid, in

(a.) Disseminating information as to certain important yet simple facts; and

(b.) Impressing, by example, their own appreciation of the value of those facts.

No class can better aid in maintaining a good condition of public health than can the clerical profession, because of their widespread influence professionally; their general intelligence, and their opportunities for personal influence in individual cases of ignorance or neglect of the fundamental principles of health which come under their observation.

Those fundamental principles are extremely simple, but their very simplicity causes them to be too generally overlooked. They include:

1. Fresh air and abundant ventilation.
2. Water free from impurity, and wholesome, unadulterated food, properly prepared.
3. Scrupulous cleanliness of habitations and their surroundings, including proper drainage; and
4. Cleanliness of person and clothing.

It is neglect of these requirements which produces or maintains most diseases and pestilences.

The clergy can aid the State Board of Health by pointing out and illustrating these essential principles of hygiene, either in public by lectures, or by instruction given privately as occasion may offer.

When it is remembered that a prominent position was given to hygienic precepts in the Mosaic law, and that in the New Testament one great feature of the Redeemer's work was healing the sick, it will be seen that the patriotic duty of both *preventing* and *curing* sickness, where it can be done, is elevated into the higher sphere of what is confessedly a part of religion, and is therefore within the province of its ministers.

Any information which the board can give to aid you in responding intelligently to its appeal for coöperation, will be very gladly furnished.

Yours with great respect,

BENJ. LEE, *Secretary*.

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#### IV. LETTER OF HEALTH OFFICER O'MALLEY, OF SCRANTON.

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DEPARTMENT BOARD OF HEALTH,  
SCRANTON, PA., *July 27, 1886.*

BENJAMIN LEE, M. D.,

*Secretary State Board of Health, 313 S. 15th street, Phila.:*

DEAR SIR: Messrs. Hewett & Son have for several years been engaged in the business of removing dead animals from within the city limits and from the surrounding country to their bone-boiling establishment, situated in an isolated place on one of the Coal and Iron Company's farms, about one-half mile from the limits of the city of Scranton, and about the same distance from a little village known as Feltzville, which is adjoining portion of Taylorville, in Lackawanna township, this county, on an elevation of about 150 feet above these places. The residents of Taylorville and vicinity complain that they have been annoyed from time to time, in hot weather, by the effluvia arising from this factory and from the stream leading from it, and they have solicited the health authorities of this city to interfere in their behalf. Accordingly at the instance of the mayor I made a thorough sanitary inspection of the premises with a view to ascertaining the cause of the complained of nuisance, and to suggest plans for its future abatement. Enclosed please find proceedings of board of health meeting of July 3, 1886, with copy of letter marked "A" sent to Hewett & Son:

"A." DEPARTMENT BOARD OF HEALTH,  
SCRANTON, PA., *June 30, 1886.*

MESSRS. HEWETT & SON, *Park Place, City of Scranton:*

DEAR SIR: Having made a thorough sanitary inspection of the bone, hide, tallow and guano factory controlled by you with a view to ascertaining the cause for complaint by residents of Taylorville and other places, I herewith submit for your consideration a few sugges-

tions for the abatement of any existing nuisances, which, if properly carried out, will give satisfaction to the State and local boards of health, as well as to all residents of Taylorville and that vicinity.

*First.* To destroy the odor arising from the vats or boiling tubs there should be a galvanized pipe about twelve inches in diameter carried all along over the tubs, with branches about twelve inches in diameter, fitted to each boiling tub so as to receive all the steam and odor caused by the boiling, and which is now sent directly into the open air. The twelve inch pipe, or tube, should be carried under the boiler fire, thus causing a draught from all the boiling vats and rendering the effluvia harmless and odorless.

*Second.* The present hog-yard site and the pens should be removed to other grounds, and the soil plowed up and planted.

*Third.* In regard to the stream complained of, the drainage from the slaughter house and bone boiling departments should not be allowed to run into it, but should be conducted by drain or pipe to a large cesspool constructed for the purpose at the rear of the factory, from which, when nearly full, it should be pumped or carried and deposited upon the neighboring farm or farms, where there is ample soakage to absorb and thus abate any nuisance arising from that source.

*Fourth.* The free use of chloride of lime or copperas should be continued in and around the premises.

J. O'MALLEY, M. D.,  
*Health Officer City of Scranton.*

Messrs. Hewett & Son do a system of scavenging in the removal of dead animals from within the city limits, highly beneficial to the sanitary interests of the city, and the health department have taken cognizance of the matter in accordance with sections four and five of your "Provisional Regulations for preventing slaughter houses, stock yards, hog pens, bone boiling, fat rendering and other similar establishments from becoming prejudicial to the public health." Some of the members of the board are in doubt as to the Scranton Health Department having jurisdiction in the premises, and I have been requested to get your advice in the matter, which you will please furnish before August 6, 1886, the date of the next meeting of the board of health, when I will be expected to report on the subject.

I have the honor to be yours, very respectfully,

JOHN O'MALLEY, M. D.  
*Health Officer of Scranton.*

V. LETTER OF THE SECRETARY IN REFERENCE TO THE NUISANCE CAUSED BY THE DRAINAGE OF THE SCHOOLEY SHAFT, LUZERNE COUNTY.

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STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 1532 PINE ST.,  
December 13, 1886.

Mr. NELSON COWAN,

DEAR SIR: I have to thank you for your courteous reply to my communication of the 22d ult., notifying you that the State Board of Health had declared the stagnant water resulting from the drainage of the Schooley shaft to be a nuisance, prejudicial to the public health, and required you to make such disposition of said water as would remove the cause of complaint.

I would say in response that the suggestions which you make have all been included in the finding of the Board, viz: "that the property holders also drain their land into this stream; that the supervisor of Exeter borough put in needed culverts in road across swamps, and that the Delaware, Lackawana and Western Railroad Company, which runs through the swamp, supply a sufficient drain for the water across their roadway." All of these measures, however, should be to a certain extent subsidiary to the construction of the channel which is rendered necessary by the immensely increased amount of water thrown into the swamp by your pumps, estimated at 1,300 gallons per minute during the twenty-four hours, and I therefore considered it expedient to bring the matter to your attention first. The evidence obtained by the member of the Board who made the inspection, is convincing as to the following points:

*First.* That since the pumping from the Schooley shaft began, the marsh has greatly increased in area, and that the water upon it is in a nearly stagnant condition.

*Second.* That, while before the opening of the shaft the marsh dried up during the summer, and became entirely inoffensive, it is now covered with from one to two feet of water, green and stagnant, containing much decaying vegetable matter, giving off offensive odors from all parts, and backing up into drains opened for draining meadowlands in its vicinity, all through the summer and fall.

*Third.* That coincidently with this increased amount of water in the swamp, there has been a rapid and alarming increase in the prevalence of diseases of a malarial type among families residing in the neighborhood, especially of chills and fever.

The Board does not condemn the water of your mine as being impure, or in itself a cause of disease. The purest water that ever was distilled, mingling with decaying vegetable matter, will produce noxious exhalations and cause pestilential disease. It is quite possible,

however, that the chemical substances held in solution in the water of your mine are destructive of vegetable life, and that a more rapid and extensive vegetable decay is produced than by the same quantity of water not so impregnated. Be this as it may, the conclusion cannot be avoided that the increase of water in the swamp and consequent deterioration of the health of the neighborhood is owing to the drainage from the Schooley shaft, and that the principle responsibility in the matter rests upon its proprietors. The fact that they do not own the property through which the channel which requires deepening runs, the Board looks on as of small moment, as the property owners would undoubtedly give their consent to have the necessary work done.

You aver that it would be an unjust discrimination against you were you compelled to bear the expense of this improvement, and yet the Board is credibly informed that the proprietors of the very next shaft, or at least a neighboring one to your own, have gone to a similar expense and have thus avoided the creation of a nuisance. The Board finds itself unable to accept your conclusion that this case comes under the general law for the drainage of naturally swampy lands.

It rather belongs to the class of cases in which an industry, right and necessary in itself, has unfortunately resulted in the creation of a nuisance, and in which the onus must necessarily fall upon the industry. I agree with you that it would be inexpedient to attempt the work during the prevalence of frost, but as soon as the frost is out of the ground no time should be lost in constructing the necessary outlet, and thus preventing a recurrence of the insalubrious conditions which have prevailed during the past two summers and autumns.

In the meantime I will notify the other parties of the decision of the Board, and I would suggest that it would be well for you to communicate with all those interested, and arrive at some definite, amicable understanding as to the part to be taken by each in remedying this serious evil.

I have the honor to be,

Yours, very respectfully,

BENJAMIN LEE,  
*Secretary.*

VI CORRESPONDENCE RELATIVE TO REGULATIONS FOR THE  
TRANSPORTATION OF DEAD BODIES.

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A. Letter of Dr. J. F. Edwards.  
B. Replies.

A

STATE BOARD OF HEALTH,  
PHILADELPHIA, *Aug. 19, 1886.*

*Secretary State Board of Health:*

DEAR SIR: At a recent meeting of the State Board of Health of Pennsylvania, I, as chairman of the "Committee on Preventable Diseases and the Supervision of Travel and Traffic," was instructed to address a communication to the secretaries of all State of Boards of Health, enquiring what regulations, if any, exist in their several States, with regard to the transportation of corpses. This information is desired with the view of bringing the matter before the National Conference of State Boards of Health at Toronto, in October.

An answer at your early convenience, will greatly oblige,

Very truly yours,

JOSEPH F. EDWARDS,  
*224 So. 16th St.*

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B

THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA,  
THE STATE BOARD OF HEALTH,  
MONTGOMERY, ALA., *Aug. 23d, 1886.*

DR. J. F. EDWARDS, *Chairman, etc.*

DEAR SIR: Your circular letter of the 19th came to-day. We have been acting in this matter of the transportation of corpses, in accordance with the rules of the Chicago, Rock Island and Pacific railway, with which you are doubtless familiar. The rules we have accepted provisionally until some general agreement could be reached.

Very truly,

JEROME COCHRAN, M. D.,  
*State Health Officer, Ala.*

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CHICAGO ROCK ISLAND AND PACIFIC RAILWAY CO.,  
PRESIDENT'S OFFICE,  
CHICAGO, *Aug. 31st, 1886.*

JOSEPH F. EDWARDS, Esq., M. D., *Philadelphia, Pa.:*

DEAR SIR: Replying to yours of the 26th ult.. I take pleasure in enclosing you a few copies of the rules in force on this road for the transportation of corpses, and can furnish more if desired.

Yours truly,

R. R. CABLE, *Pres't Co.*



## CHICAGO, ROCK ISLAND &amp; PACIFIC RAILWAY CO.

OFFICE OF SURGEON-IN-CHIEF,

DAVENPORT, IOWA, February 1, 1886.

*Rules for the guidance of Station Agents and Baggage-men in receiving and Transporting Dead Bodies.*

RULE 1. The transportation of the bodies of persons dead of small-pox, Asiatic cholera, typhus fever or yellow fever is absolutely forbidden.

RULE 2. All other dead bodies may be transported, provided they are incased in an antiseptic interment sack, hermetically sealed, in addition to being in a coffin, and this in a tight wooden box, *except* those dead of diphtheria, scarlet fever, typhoid fever, erysipelas, measles and other contagious or infectious diseases, which must be wrapped in a sheet thoroughly saturated with a strong solution of chloride of zinc, in the proportion of one-half pound of chloride of zinc to a gallon of water, before being incased in the antiseptic sack. The coffin must also be surrounded by sawdust, saturated with a solution of chloride of zinc of the same strength as stated above.

RULE 3. In cases of contagious or infectious diseases, the body shall not be accompanied by persons who (or articles which) have been exposed to the infection of the disease.

RULE 4. Every dead body must be accompanied by a person in charge, presenting a certificate of death from a physician, or a permit from board of health, and a certificate from the shipping undertaker, that the corpse has been prepared for transportation strictly in accordance with the above rules.

**PHYSICIAN'S CERTIFICATE OF DEATH.**

..... 188.....  
 Name of Deceased..... (if minor, give parent's name.)  
 Date of death..... 188..... Age..... Years..... Months..... Days.....  
 Place of Death .....

CAUSE OF DEATH.		DURATION OF DISEASES, in Years, Months, Days, or Hours.*	
		*This duration of each disease, when given, is reckoned from its commencement to death.	
Chief and Determining.	{	.....	.....
		.....	.....
Consecutive and Contributing.	{	.....	.....
		.....	.....

I hereby certify that the above is true to the best of my knowledge and belief.

..... M. D.

Residence of certifying Physician.....

County of.....

State of.....

Post Office Address.....

**NOTE** This Certificate, or a Permit from the Board of Health must be issued in duplicate, the original to accompany the body to destination. The duplicate copy will be retained by the Agent at the initial point and sent to the General Baggage Office.

**UNDERTAKER'S OR SHIPPER'S CERTIFICATE.****NON-INFECTIOUS OR NON-CONTAGIOUS DISEASE.**

.....188....

THIS IS TO CERTIFY, That the body of .....(if minor, give parent's name), named in the accompanying Physician's Certificate, has been prepared by me for transportation by being incased in an antiseptic interment sack, hermetically sealed.

.....Undertaker.

Residence of Undertaker.....

Post Office Address.....

☒ This Certificate must be issued in duplicate, the original to accompany the body to destination. The duplicate copy will be retained by the Agent at the initial point and sent to the General Baggage Office.

**UNDERTAKER'S CERTIFICATE.****INFECTIOUS OR CONTAGIOUS DISEASE.**

.....188....

I hereby certify that the body of .....named in accompanying Physician's Certificate has been prepared by me for transportation, by being: First—Wrapped in a sheet thoroughly saturated with a strong solution of Chloride of Zinc (in the proportion of one-half pound of Chloride of Zinc to one gallon of water). Second—By being placed in an antiseptic interment sack, hermetically sealed. Third—The coffin being surrounded by sawdust saturated with zinc solution of strength stated above.

Signed, .....Undertaker.

Residence.....County of.....State of.....

State of.....

County of.....} SS. On this.....day of.....A. D. 188....

before me, a.....(Notary Public, Justice of the Peace or Clerk of Court), in and for the County and State aforesaid, personally appeared.....to me known, and made oath and says that all of the statements contained in the foregoing Certificate are true, and that the health officer of .....(the locality to which the body is consigned) has had timely notice of the time of its arrival within his jurisdiction as will enable him to supervise its reception.

Sworn to and subscribed to before me this.....day of.....A. D. 188....

**L.S.**

.....Notary Public.

.....County, .....State.

☒ This Certificate must be issued in duplicate, the original to accompany the body to destination. The duplicate copy will be retained by the Agent at the initial point and sent to the General Baggage Office.

Agents and baggagemen will see that the above instructions are strictly enforced. It is intended that no dead body shall be received which may be the means of spreading disease: therefore all disinterred bodies dead from any disease or cause will be treated as infectious, and dangerous to the public health.

Until further notice, corpses transferred to this company at terminal or junctional stations, from connecting lines, will be carried as here-

tofore—viz: on presentation of board of health permit, or proper certificate of death, signed by a physician.

A. KIMBALL,  
*Vice Pres. and Gen. Supt.*  
J. D. MARSTON,  
*Gen. Baggage Agent.*  
W. F. PECK,  
*Surgeon-in-Chief.*

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CALIFORNIA STATE BOARD OF HEALTH,  
SACRAMENTO, *August 26, 1886.*

J. E. EDWARDS, M. D.,

*State Board of Health, Philadelphia, Penn'a.:*

DEAR SIR: In reply to your communication of 19th inst., regarding the transportation of corpses, allow me to say that we have no State law upon the subject. The railroad insists that a body shall be securely boxed and hermetically sealed, and San Francisco has a local ordinance forbidding the transportation of a corpse without a permit from the health officer. A State law is needed in every State defining the manner in which dead bodies may be transported; it now depends entirely upon the carriers in this State whether a body is hermetically sealed or otherwise.

I remain, dear sir,

Yours respectfully,

G. G. TYRRELL,  
*Secretary.*

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CONNECTICUT STATE BOARD OF HEALTH,  
NEW HAVEN, CONN., *August 21, 1886.*

J. F. EDWARDS, M. D.:

DEAR DOCTOR: Yours of the 19th inst. is at hand, and in reply I enclose a few copies of our blank permits for removal. On the back of these you will find printed the law in force in Connecticut governing the transportation of the dead.

I am, very truly yours,

O. A. LINDSLEY,  
*Secretary.*

## OFFICE OF

## REGISTRAR OF VITAL STATISTICS,

....., Conn., ..... 18

Permission is hereby given to remove the remains of

....., age ..... years ..... months,

Date of Death, ..... Cause of Death, .....

to ..... for interment.

.....Registrar.

## Certificate of Undertaker.

To be attached to the burial  
case.I hereby certify that the  
body of.....  
named in this permit, is en-  
closed in an air-tight coffin,  
or properly disinfected, as  
directed by law......  
Undertaker.If an air-tight coffin is used  
draw a line through "or  
properly disinfected," and the  
same for the first clause if  
disinfected, unless both pro-  
visions are complied with.

*This Permit Must Accompany the Body  
to Its Destination.*

SECTION 1. No person shall remove the body of any deceased person from or into the limits of any town in this State otherwise than for immediate burial in a cemetery adjacent to the town in which such person died, unless there shall be attached to the coffin or case containing such body a written or printed permit signed by the registrar of deaths in said town, or by an undertaker in charge of said body, certifying the cause of death or disease of which said person died; and further certifying, in case said disease or cause of death appears by said permit to have been cholera, yellow fever, diphtheria, scarlet fever, small pox, or other pestilential disease, that said body is enclosed in an air-tight coffin or case, hermetically sealed, or has been fully disinfected, or both; and any person who shall violate any provision of this section, or who shall knowingly sign any false permit, or knowingly cause or allow any false permit to be used in lieu of a permit required by this section, shall be fined not more than five hundred dollars, or imprisoned not more than six months, or both.

Approved, April 25, 1882.

OFFICE OF THE SECRETARY OF THE  
BOARD OF HEALTH OF THE STATE OF DELAWARE,  
WILMINGTON, DEL., *August 25, 1886.*

JOS. F. EDWARDS, M. D., *Philadelphia, Pa.*

DEAR DOCTOR: Yours of the 19th is at hand asking for regulations of the removal of dead bodies. I have the honor to report that no dead body is buried in the city of Wilmington without a written permit is given by the registra. All persons who die of infectious or contagious diseases must be buried within twenty-four hours and the funeral private. All dead bodies are sent away by a transit permit, and those brought here, or who pass through the city, must be accompanied by a permit stating the disease. Dead bodies disinterred after six months' burial must be by permit.

Very truly yours.

E. B. FRAZER.  
*Secretary.*

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Indiana State Board of Health.

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RULES FOR THE GOVERNMENT OF STATION AGENTS AND BAGGAGMEN IN  
RECEIVING AND TRANSPORTING DEAD BODIES.

*Rule 1.* The transportation of bodies of persons who have died from small-pox, Asiatic cholera, typhus or yellow fever is strictly forbidden.

*Rule 2.* From November 15th to May 1st all other dead bodies may be transported without restriction, except those who died of diphtheria, scarlet fever, typhoid fever, erysipelas, and measles, which must be wrapped in a sheet thoroughly saturated with a solution of chloride of zinc ( $\frac{1}{2}$  pound chloride of zinc to a gallon of water), or one ounce of corrosive sublimate to a gallon of water, and placed in an air-tight coffin which must be inclosed in a tight wooden box. The coffin must be surrounded by sawdust, saturated with a solution of chloride of zinc or corrosive sublimate, the same as above.

*Rule 3.* From May 1st to November 15th, all bodies not having died from diseases specified in Rules 1 and 2 presented for transportation, must, in addition to being placed in a coffin, be inclosed in an encasing sack, hermetically sealed.

*Rule 4.* No person or article which has been exposed to the contagion can accompany the body.

*Rule 5.* Every dead body must be accompanied by a physician's certificate of death, and a certificate from the shipping undertaker that the body has been prepared for transportation in accordance with the rules of the Indiana State Board of Health.

## FORMS OF CERTIFICATES REQUIRED BY THE BOARD.

*Physician's Certificate of Death.*

I hereby certify to the best of my knowledge and belief that  
 . . . . . aged . . . . . years . . . . . months . . . . . days,  
 died of . . . . . M. D.

Residing in . . . . . Co., Indiana.

. . . . . 188 . . .

I hereby certify that the body of the person named in the foregoing  
 physician's certificate has been prepared by me for transportation in  
 accordance with the rules of the State Board of Health.

. . . . . Undertaker.

Residing in . . . . . County, Indiana.

In the enforcement of these rules it must be understood that the  
 intention is that no dead body shall be received which may be the  
 means of spreading any contagious or infectious disease.

Therefore, in receiving any dead body which has been shipped  
 from within either Illinois, Kentucky or Michigan, the rules of those  
 State Boards of Health must be observed. Ohio having no State  
 Board of Health the rules of this Board will govern all cases from  
 said State.

All dead bodies presented by connecting lines and coming from  
 beyond the States mentioned need only to be accompanied by a  
 physician's certificate, clearly setting forth that the disease of which  
 the person died was not of a contagious or infectious character.

The rules and regulations made by the State Board of Health and  
 adopted by the various local Boards in accordance with powers given  
 by act creating State and local Boards of Health, etc., are laws to be  
 obeyed by every individual in the State.

All prosecutions for violations of the statute law, or the rules of  
 local boards of health should be instituted by the several prosecut-  
 ing attorneys of this State upon information of such local boards.

The above rules and regulations are hereby adopted, and all rules  
 and regulations heretofore promulgated by circular, card or pamph-  
 lets, or through newspaper publications, in conflict with the forego-  
 ing, are hereby revoked.

By order of the Indiana State Board of Health.

S. R. SEAWRIGHT, M. D.,

*President.*

C. N. METCALF, M. D.,

*Secretary and Executive Officer.*

November 5, 1885.

## Iowa.

## RESOLUTIONS

*Adopted by the Iowa State Board of Health, at Des Moines, May 18th, 1886.*

WHEREAS, The Iowa State Board of Health did, at its May meeting, 1885, approve and adopt certain Rules and Regulations for the Transportation of Corpses with the assurance and understanding that the same had been adopted by the National Railroad General Baggage Masters' Association, and

WHEREAS, The National Baggage Masters' Association at its meeting at Cincinnati, January 21st, 1886, did rescind its action regarding the transportation of corpses; therefore, be it

*Resolved*, That the Iowa State Board of Health hereby rescinds the rules and regulations for the transportation of corpses now in force.

*Resolved*, That it is the opinion of this Board that dead bodies may be transported by railroad, without danger from infection or nuisance, when incased in an antiseptic interment sack, or in a substantial, hermetically sealed metallic casket or case under proper restrictions.

*Resolved*, That the following rules and regulations for the transportation of corpses be adopted by the Iowa State Board of Health :

**RULES OF THE IOWA STATE BOARD OF HEALTH.**

**RULE 1.** The transportation of bodies dead from small-pox, Asiatic cholera, typhus fever, and yellow fever is absolutely forbidden.

**RULE 2.** The bodies of those dead from diphtheria, scarlet fever, typhoid fever, erysipelas, measles, or other contagious or infectious disease, except such as are named in Rule 1, must be prepared for shipment by being wrapped in a sheet thoroughly saturated with a strong solution of chloride of zinc, in the proportion of one-half pound of chloride zinc to one gallon of water, and then inclosed in an antiseptic interment sack hermetically sealed, before being placed in the coffin, unless the coffin used is air-tight.

**RULE 3.** All other dead bodies may be transported, provided they are inclosed in air-tight wooden boxes lined with zinc, copper or lead; or in air-tight cases. If any other form of coffin is used, the body must be inclosed in an hermetically sealed antiseptic interment sack.

**RULE 4.** Bodies may be shipped from the various State charitable institutions upon the certificate of the attending physician that the person so shipped did not die of any of the infectious or contagious diseases named in these rules, and that the body has been properly embalmed. In all other cases shipments from such institutions, except hospitals for insane, must be prepared as required by Rule 3.

**RULE 5.** Every dead body must be accompanied (1) by a certificate of a physician showing the cause of death, or a certificate from the coroner; and (2), a certificate from the shipper or undertaker that the body has been prepared for transportation in accordance with the

rules of the State Board of Health, and in case of infectious disease, said certificate shall be made under oath.\*

RULE 6. All disinterred bodies will be deemed infectious and dangerous to the public health.

STATE OF IOWA—HEALTH DEPARTMENT—TRANSPORTATION OF CORPSES.

*Transit Permit.*

From . . . . .  
To . . . . .  
State of . . . . .  
Carrier . . . . .  
Body of . . . . .  
Died . . . . . 188 . . . . .  
At . . . . .  
Cause of Death . . . . .  
. . . . .  
. . . . .

UNDERTAKER.

This Permit must be issued in duplicate, one copy to be retained by the Railroad Agent at the point of shipment for the General Baggage Agent, the other to accompany the body to destination, and be delivered therewith.

*The undertaker or shipper must fill out entire, and sign the above blanks.*

Kansas.

OFFICE OF SECRETARY STATE BOARD OF HEALTH.

TOPEKA, KANSAS, *September 1, 1886.*

JOSEPH F. EDWARDS, M. D. :

DEAR SIR: Your letter of August 19, received. Absence from the State has prevented a more prompt reply. Enclosed please find a copy of the certificate, coupons and rules in force and governing the transportation of corpses in Kansas.

Yours truly,

J. W. REDDEN,  
*Secretary Kansas State Board of Health.*

\*These certificates are made a part of the Transit Permit herewith annexed.



(Form 23.)

## STATE OF KANSAS.

## DEPARTMENT OF HEALTH.

## TRANSPORTATION OF CORPSES.

*Physician's Certificate of Death.*

....., Kansas. ...., 188....  
 Name of Deceased, .....  
 Date of Death, ..... 188.... Age, ... yrs., ... mos., ... days  
 Place of Death, .....  
 Cause of Death, .....  
 I certify hereby that the above is true to the best of  
 my knowledge and belief. .... M. D.  
 Residence of certifying Physician, ..... County of  
 ..... Kansas.

*Undertaker's or Shipper's Certificate.*

....., Kansas. ...., 188..  
 ..... hereby certify that the dead body of .....  
 (If minor, give parents' names.)  
 named in the foregoing Physician's Certificate, has been  
 prepared by ..... for transportation in accordance with  
 the rules of the Kansas State Board of Health. .... Undertaker.  
 Residence of Undertaker, .....

## STATE OF KANSAS.

## HEALTH DEPARTMENT.

*Transportation of Corpses.*

## COUPON TRANSIT PERMIT

From ..... to .....  
 Body of .....  
 Died ..... 188., at .....  
 Cause of Death, ..... M. D.

## STATE OF KANSAS.

## HEALTH DEPARTMENT.

*Transportation of Corpses.*

## COUPON TRANSIT PERMIT

From ..... to .....  
 Body of .....  
 Died ..... 188., at .....  
 Cause of Death, ..... M. D.

## STATE OF KANSAS.

## HEALTH DEPARTMENT.

*Transportation of Corpses.*

## COUPON TRANSIT PERMIT

From ..... to .....  
 Body of .....  
 Died ..... 188., at .....  
 Cause of Death, ..... M. D.

## RULES OF THE KANSAS STATE BOARD OF HEALTH.

RULE 1. The transportation of the bodies of persons dead from Small Pox, Asiatic Cholera, and Yellow Fever, is prohibited and absolutely forbidden.

RULE 2. From November 15 to March 15 all dead bodies may be transported without restriction, except those dead from Diphtheria, Scarlet Fever, Typhus and Typhoid Fever.

RULE 3. The bodies of persons dead from Diphtheria, Scarlet Fever, Typhus and Typhoid Fever, must at all times be first closely wrapped in a carbolated cere-cloth, or some equally effective substitute, and placed in a metallic or wooden coffin, and that inclosed in a tight wooden box.

RULE 4. From March 15 to November 15 all bodies presented for transportation will be prepared as provided in Rule 3, except the bodies of persons dead from non-contagious diseases, if placed in a metallic coffin and that inclosed in a tight wooden box; then they need not be wrapped in a carbolated cere-cloth.

RULE 5. Every dead body must be accompanied by a Physician's Certificate of Death, and a certificate from the shipping Undertaker that the corpse has been prepared for transportation in accordance with the rules of the Kansas State Board of Health.

RULE 6. A carbolated cere-cloth is a strong cotton winding-sheet, which has been dipped in a melted mixture of wax, tallow or lard, and carbolic acid. A cheaper substitute is one dipped in a strong watery solution of carbolic acid, or of chloride of zinc (Burnett's solution). An outer envelope of India rubber, lined with a cotton or flannel cloth saturated with an aqueous solution of carbolic acid, is an effective substitute for a cere-cloth, and may be used. When bodies are embalmed the cere-cloth may be dispensed with.

G. H. T. JOHNSON, M. D., President.  
 J. W. REDDEN, M. D., Secretary.

## SPECIAL NOTICE.

All Railroads and Express Companies in Kansas, Missouri, Iowa and Illinois have accepted the foregoing rules, and require their enforcement by station agents and train men, and the rejection of all dead bodies offered for transportation, not accompanied with the proper permit.

## STATE OF KANSAS.

## DEPARTMENT OF HEALTH.

*Transportation of Corpses.*

## TRANSIT PERMIT

From .....  
 To .....  
 Body of .....  
 Died ..... 188..  
 At .....  
 Cause of Death ...  
 .....

## Kentucky.

STATE BOARD OF HEALTH OF KENTUCKY,  
BOWLING GREEN, KY., *August 24, 1886.*

DR. JOSEPH F. EDWARDS,

*224 S. 16th street, Philadelphia :*

DEAR DOCTOR : The rules of this Board forbid, under all circumstances, transportation within this State, of the bodies of persons dead from cholera, yellow fever, and small-pox, and allow the transportation of other bodies dead from diseases dangerous to the public health, only when prepared for shipment under the strictest antiseptic precautions, and it requires the certificate of the attending physician and shipping undertaker in all cases. The revised rules are now in the hands of the printer and will not be out for some little time, or I would be very glad to send them to you. The subject will be a very interesting one for discussion at the conference.

Very truly yours,  
J. N. McCORMACK, *Secretary.*

## Louisiana.

BOARD OF HEALTH, STATE OF LOUISIANA,  
NEW ORLEANS, *August 23, 1886.*

JOSEPH F. EDWARDS, M. D.,

*State Board of Health of Pennsylvania :*

DEAR SIR : In reply to your communication of 19th inst., I enclose you form of permit issued by this board for the removal of corpses. On the back of same you will find printed a copy of ordinance bearing upon same. This is an ordinance of the city of New Orleans and the district therein referred to comprise only the parish of Orleans. There is no State law bearing upon the subject, as the matter is left by law to the jurisdiction of local boards of health and parish police juries.

Yours very respectfully,

LUCIEN F. SALOMON, M. D.,  
*Secretary, &c.*

No.....

OFFICE OF BOARD OF HEALTH,  
STATE OF LOUISIANA.

New Orleans,.....188

Permission is hereby given to.....  
To.....the body of .....  
From.....to.....  
Per.....for.....  
Cause of death.....

.....M. D.,

This permit must, in all cases, accompany } .....Board of Health,  
the body to its destination. } State of Louisiana.

## ORDINANCE RELATIVE TO REMOVAL OF BODIES.

SECTION 23. Any persons, who shall disinter or disentomb any human body or the remains thereof, within the district under the control of the Board of Health, without authority first had from the proper officers of said board, or shall remove beyond the limits of said district, or introduce therein, any human body or the remains thereof, without leave first had from the proper officers of said board, shall be liable to a fine not to exceed fifty dollars.

**Maine.**

MAINE STATE BOARD OF HEALTH,  
AUGUSTA, *Sept. 4, 1886.*

DEAR DOCTOR: We have no laws in our State in regard to the transportation of corpses.

Yours truly,

A. G. YOUNG,  
*Per M. I. L.*

**Massachusetts.**

COMMONWEALTH OF MASSACHUSETTS.  
STATE BOARD OF HEALTH, 13 BEACON STREET,  
BOSTON, *August 20, 1886.*

JOS. F. EDWARDS, Esq.,

*224 S. 16th Street, Philadelphia, Pa.:*

DEAR SIR: In reply to yours of August 19, I transmit a copy of the act of 1883, Cha. 124, now in force in this State relative to the transportation of bodies of persons who have died of certain infectious diseases.

Respectfully yours,

SAMUEL W. ABBOTT,  
*Secretary.*

## [CHAP. 124.]

An act relating to the removal and the transportation of certain bodies for burial.

*Be it enacted, etc., as follows:*

SECTION 1. Section five of chapter thirty-two of the Public Statutes, relating to the burial or removal of bodies for burial, is amended by inserting in the eleventh line thereof, after the word "bury," the words "or remove."

SECTION 2. No railroad corporation, or other common carrier or person, shall convey or cause to be conveyed, through or from any city or town in this Commonwealth, the remains of any person who has died of small-pox, scarlet fever, diphtheria or typhoid fever, until such body has been so encased and prepared as to preclude any danger of communicating the disease to others by its transportation; and no local registrar or clerk shall give a permit for the removal of such body until he has received from the board of health of the city, or the selectmen of the town where the death occurred, a certificate, stating the cause of death, and that said body has been prepared in the manner set forth in this section, which certificate shall be delivered to the agent or person who receives the body.

SECTION 3. This act shall take effect upon its passage. [*Approved April 11, 1883.*]

## Michigan.

MICHIGAN STATE BOARD OF HEALTH,  
LANSING, MICH., August 23, 1886.

JOSEPH F. EDWARDS, M. D., *Member State Board of Health,*  
224 S. 16th Street, Philadelphia, Pa.:

DEAR DOCTOR: In reply to your communication of August 19, I send you by this mail a copy of a document on "Prevention of the Introduction of Communicable Diseases," which will give you all the law there is in this State governing the transportation of corpses. I think the railroad companies require the permit of the health officer at the point of departure, in the case of transporting a body dead from a communicable disease; but they do not comply with the law in securing the permit of the health officer at the point of destination.

Very respectfully,

HENRY B. BAKER,  
*Secretary.*

## PERMITS FOR REMOVAL OF SICK PERSONS OR INFECTED ARTICLES.\*

Under the law in Michigan, whoever takes the body of a person sick with or dead from a communicable disease, or any person or article capable of conveying disease, into any township, city or village in Michigan, without a written permit granted by the board of health of the locality *from* which, and also of the locality *to* which the infected body or article is taken, does so at his peril.

The law authorizing the granting of permits, section 57 of the Public Health Laws, section 4705 of the Compiled Laws of 1871, and section 1646 of Howell's Annotated Statutes, is as follows:

Board may per- 57. (1705.) SEC. 14. The board of health may grant  
mit removal of permits for the removal of any nuisance, infected article,  
infected articles, or sick person within the limits of their township, when  
etc. they shall think it safe and proper so to do.—§ 1646.

The provisions of the foregoing section and of other sections in chapter XLVI of the Compiled Laws of 1871, apply to cities and villages, by reason of act No. 145, laws of Michigan, 1879 (§ 1681, Howell's Statutes, 16 of Public Health Laws), excepting in cases where the charters of cities or villages contain provisions inconsistent therewith.

It should be distinctly understood that a permit by the board of health for the removal of an infected article, dead body, or sick person is *good only within the limits of the township, city, or village in which the permit is granted.*

Such a permit should not be granted by a board of health except under such conditions and circumstances as will not endanger "the

\* Infectious or communicable diseases include small-pox, scarlet fever, diphtheria, typhus fever, cholera, etc.

public health and safety." Relative to an infected dead body, if a permit be granted it should be conditioned as follows:

*Rule 1.* Before being placed in the coffin, the remains of the deceased shall be wrapped in a sheet thoroughly saturated with a strong solution of chlorinated soda, or chloride of zinc, one-half pound to the gallon of water, or a solution made in proportions as follows: water, one gallon; sulphate of zinc, eight ounces; common salt, four ounces.

*Rule 2.* The coffin shall be packed in a strong box, and shall be surrounded by sawdust, saturated with zinc solution of a strength equal to that required by Rule 1, above.

*Rule 3.* The body shall not be accompanied by persons who (or articles which) have been exposed to the infection of the disease.

*Rule 4.* The coffin shall not be opened, neither shall the box be opened, at the place of destination.

*Rule 5.* The burial shall take place immediately after arrival at the place of destination.

*Rule 6.* There shall be no public funeral.

*Rule 7.* The health officer of . . . . . (the locality to which the body is consigned), shall have from the person in charge of the body, such timely notice of the time of its arrival within his jurisdiction as will enable him to supervise its reception.

*Rule 8.* In case there is necessity for trans-shipment of the body or other infected article, the health officer in whose jurisdiction the trans-shipment is to occur, shall have such timely notice of the time of its arrival within his jurisdiction as will enable him to supervise its trans-shipment.

Any person proposing to transport a dead body or other infected article, should first make sure that the body or other article will be permitted to enter and remain in the locality to which it is to be consigned; and that the health officer of the locality to which the body or other article is to go, shall be informed of the proposed removal in time to attend to its reception in the safest manner. This may, perhaps, be secured by requiring, as a prerequisite, to see a permit, for this particular body or article, from the board of health in the locality to which the removal is proposed. It will also be conducive to safety if the board of health in each locality from which a removal is proposed will send timely notice to the health officer into or through whose jurisdiction it is proposed to send an infected body or article.

#### Missouri.

ORDINANCE of the State Board of Health of Missouri in relation to the preparation and transportation of dead bodies. Adopted Nov. 28th, 1885.

1. The transportation of the bodies of persons dead from small-pox, Asiatic cholera and yellow fever, is prohibited and absolutely forbidden.

2. From November 15th to March 15th, all dead bodies may be transported without restriction, except those dead from diphtheria, scarlet fever, typhus, and typhoid fever.

3. The bodies of persons dead from diphtheria, scarlet fever, typhus and typhoid fever must at all times be first closely wrapped in a carbolated cere-cloth, or some equally effective substitute, and placed in a metallic or wooden coffin, and that enclosed in a tight wooden box.

*Note.* A carbolated cere-cloth is a strong cotton winding-sheet which has been dipped in a melted mixture of wax, tallow, or lard, and carbolic acid. A cheaper substitute is one dipped in a strong watery solution of carbolic acid, or of chloride of zinc (Burnett's solution).

An outer envelope of India rubber, lined with a cotton or flannel cloth saturated with an aqueous solution of carbolic acid, is an effective substitute for a cere-cloth, and may be used.

When bodies are embalmed the cere-cloth may be dispensed with.

4. From March 15th to November 15th, all bodies presented for transportation must be prepared as provided in section 3.

5. Every dead body must be accompanied by a Physician's Certificate of Death, and a certificate from the shipping undertaker that the corpse has been prepared for transportation in accordance with the requirements of this ordinance.

Attest:

GEO. HOMEN, M. D., *Secretary.*

WM. GENTRY,  
*President.*

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New Hampshire.

OFFICE OF THE STATE BOARD OF HEALTH,

CONCORD, Sept. 22, 1886.

JOSEPH F. EDWARDS, M. D., 224 South 16th St., Philadelphia, Pa.:

DEAR SIR: Your circular letter of Aug. 19, was received some time ago, but I hope the reply will be in season for your purposes.

Prior to 1881, I think there were no regulations in this State governing the transportation of corpses. In the latter part of the year just mentioned, or early in 1882, by advice of the State Board of Health, the leading, if not all the railroad lines in New Hampshire adopted a regulation requiring that a transportation permit should accompany every corpse shipped over the railroad lines. The conditions of the permit were that it should embody the certificate of the attending physician, relative to the cause of death, or in other words it should certify that the deceased person whose body was offered for shipment did not die of a contagious or infectious disease. At this time there was no State registration law in force, although a defective law had been upon the statutes for many years. Some of our cities, by ordinances of their own, had established a system of registration, and also required burial permits. These permits were issued by the city registrar, upon receipt of the certificate of the attending physician as to the cause of death, or upon the representation of friends or

relatives if there was no physician in attendance. These permits were received by the transportation companies without question.

In 1883, through the efforts of the State Board of Health, an entirely new registration law was enacted, which required a burial permit in all cases. This permit, a copy of which is enclosed, is issued by the local registrar and certifies, among other things, to the *cause* of death. This permit, properly issued and signed, is now received throughout the State by all transportation companies without question. It will be seen by referring to sections 4, 5 and 6, of the New Hampshire registration law, a copy of which is inclosed herewith, that the law relating to the registration of deaths and the issuing of burial permits is very specific, and at the present time it is very thoroughly enforced throughout the State. We have, therefore, under our present law no trouble in relation to the shipment of corpses within the State, and the rules adopted by the transportation companies exclude all from other States that are not accompanied by the proper permit.

Trusting that the above will give you a definite idea of our system of registration relative to deaths as well as the transportation of deceased persons. I remain, very truly yours,

IRVING A. WATSON, *Sec'y.*

#### Registrar's Memoranda.

[This stub is not to be detached from book.]

Deceased named in Permit,  
.....  
Date of Death.....188 .  
Age,..... years,.....  
months,..... days,.....  
Buried at.....  
in.....  
on.....188 .  
Issued to.....  
Date,.....188 .  
No.....

DETACH AT PERFORATED LINE.

#### Undertaker's Voucher.

Deceased named in Permit,  
.....  
Buried at.....  
in ..  
on.....188 .  
.....Registrar.  
.....N. H.,.....188 .  
No,.....

#### State of New Hampshire. Burial Permit.

.....N. H.,.....188 .  
Permission is hereby given....  
to remove the remains of.....  
Date of Death,.....188 .  
Age,.. years,.. months,.. days  
Place of Death .....Ward....  
Street,.....No....  
Cause of Death.....  
Medical Attendant,.....  
To.....for interment,.....188 .  
No.....Registrar.

This coupon is to be cut off at the dotted lines, and kept by the person acting as sexton or undertaker, as a voucher that he has complied with the provisions of the law.

This Permit must be returned to the Clerk of the town or city in which the death occurred, within SIX DAYS after burial.

Any person acting as Undertaker or Sexton without a Burial Permit will be subject to a fine not exceeding one hundred dollars.—*Chap. 70,*

*Pamphlet laws, 1883.*

## New Jersey.

JOSEPH L. EDWARDS :

MY DEAR SIR : No body can be buried in this State without a permit. We do not interfere with the through transportation of corpses through this State. In case of an epidemic under section 9 of our general law we would exercise all necessary authority. We are glad the matter is attracting the attention of your Board, as we are led to believe there is not rigid enforcement of the law in Philadelphia as to burial permits, etc., in case of bodies brought from other States into your State for burial.

Respectfully yours,

E. M. HUNT,  
*Secretary.*TRENTON, *August 23, 1886.*

## BUREAU OF VITAL SEATISTICS, NEW JERSEY.

*Marriage, Birth and Death Returns.*

3. *And be it enacted*, That no sexton, undertaker or other person shall hereafter bury within this State, or bring into or remove from this State, the body of any deceased person, without having first received a permit from the proper authority of the county, city or township wherein such person may have died, and, if so doing, said sexton, undertaker, or other person shall be liable to a penalty of fifty dollars; *provided*, that in burying any deceased person who died in any township in this State outside of city limits, or county health board limits, the certificate of any regularly graduated physician of the township wherein the person died, shall be held by the sexton or undertaker as the only necessary burial permit, to be disposed of by him as hereinafter provided.

4. *And be it enacted*, That in case of any person dying within this State, it shall be the duty of the physician who may have attended him during his last illness, to furnish the undertaker, or any member of the family applying therefor, a certificate of the death of said person, which certificate shall show the name, age, sex, color, nativity, occupation, last place of residence, place of death and the cause of death, according to the best of his knowledge; and said certificate shall constitute all the necessary burial permit in any township of the State, outside of city or incorporated or county health board limits, and the undertaker shall, within five days after said burial, send the same, by mail or otherwise, to the assessor of the township in which the deceased died, under a penalty of fifty dollars, as herein provided; *and furthermore it is provided*, that any undertaker residing in an incorporated city or town may present the certificate of death, in case of any burial which he is superintending, to the city clerk or other proper officer of said city, and receive the usual permit as issued by it, on condition that said clerk shall at once transmit said certificate



to the assessor of the township in which the person died; *and in case there has been no physician in attendance*, some member of the family, if there be any present, if not, any one present shall notify a physician of the death at once, and the physician shall proceed to view the dead body and ascertain all the facts necessary, and, if satisfied of the cause of death, grant the township certificate for burial, and, if not satisfied, shall send at once for the county coroner, or county physician, or justice of the peace, who shall take charge of the body and investigate the same, and if any person present at the death of any person shall refuse or neglect to comply with the requirements of this act, they shall be liable to a penalty of ten dollars, and the physician shall receive one dollar for viewing a dead body and granting a burial certificate, provided said physician has not been in regular attendance on the deceased; if so, no extra charge shall be made by said physician.

5. *And be it enacted*, That in any case where, on account of the absence of the proper officer, or for any other sufficient reason, it may be impossible to obtain from said officer a permit in time for burial, it shall be lawful for any judge of the Court of Common Pleas, or any justice of the peace, of the county in which the person died, on being satisfied as to the correctness of said certificate, to issue a permit for burial in the following form: "It being impossible to obtain a burial permit from the proper officer on account of (here stating the reason) I hereby grant this special permit for the burial of ———, whose death has been duly certified to me;" the said judge or justice of the peace shall at once copy upon the back of said certificate the permit as granted, and mail the same to the office of the Secretary of State at Trenton, marked on the envelope "Burial Permit;" and the undertaker or other person, on the receipt of such special permit, shall pay to the said judge or justice granting the same the sum of fifteen cents.

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New York.

STATE BOARD OF HEALTH OF NEW YORK,

ALBANY, August 9, 1886.

TO JOSEPH F. EDWARDS, M. D., *Chairman Committee on Preventable Diseases, etc., 224 South Sixteenth Street, Philadelphia:*

DEAR SIR: In response to yours of the 19th inst., asking for the regulations of this State Board of Health regarding the transportation of the dead, I beg to enclose you herewith a copy of the form of transit permit required to be used in the case of all bodies interred beyond the limits of the county where the death occurs.

The organic law of the State Board of Health assigning to it the duty of preparing the necessary methods and forms, and prescribing the rules regulating the issue and use of transfer permits for the transportation of the dead bodies of persons which are to be carried

for burial beyond the limits of the county where the death occurs, the inclosed form was adopted and the regulations printed thereon promulgated.

Of course it is unwise for bodies dying of contagious and infectious diseases to be transported unless special care is taken to render such transportation safe from a sanitary point of view.

Very respectfully yours,

LEWIS BALCH,

Secretary.

<b>TRANSIT.</b>	<b>THIS PERMIT MUST IN ALL CASES ACCOMPANY THE BODY TO ITS DESTINATION.</b>	Form 6
"Stub" or "Counterfoil" to be retained by person issuing permit.		STATE OF NEW YORK.
<b>TRANSIT PERMIT.</b>	R. E. Agents and all other carriers see back of permit.	<b>TRANSIT PERMIT. [FOR PUBLIC CARRIER.]</b>
1. Issued to.....	In the.....County.	.....188
2. Name of deceased..... (If a minor, give parents' names.)	Permission is hereby given to remove the remains of.....	aged....., who died at
3. Interment at.....	(City, or township and county.)	on the.....day of.....188., the cause
4. Date of death....Age..	of death being .....	and a transit permit being asked for burial at
5. Place of death.....	..... in the	State of.....
6. Cause of death.....	(Signed by).....	.....
8. Certified by.....	.....	.....
.....M. D.	Name of Undertaker or person in charge of the transit,	.....

Coupon No. TWO, to transit permit of..... who died at.....  
Before this body leaves..... the carrier or transportation agent will tear off this coupon. If otherwise detached from the permit the coupon must not be received.

Coupon No. ONE, to transit permit of..... who died at.....  
Before this body leaves..... the carrier or transportation agent will tear off and keep this coupon. If otherwise detached from the permit the coupon must not be received.

## TRANSIT PERMIT.

Issued at..... Co., N. Y.  
 Issued by.....  
 To whom issued.....  
 Name of deceased.....  
 Date of death.....  
 Name of person or carrier in charge.....  
 Date of transit.....

Railroad and steamboat agents, ferry-masters, and all carriers that convey the remains over the limits of the county where the death occurred, will retain one of the coupons hereto attached, and deliver the body only to the persons holding this permit. The name of the deceased must appear on the coupons, which will be returnable to the city or place through or out of which the body is first conveyed, or to such authority as may be directed by the person who issued the permit.

The first coupon should be taken by the carrier who transports the body from the county where the death occurred: and the second should be taken by carrier or agent of transportation upon the route beyond said county, and it may be so taken at either terminus of the distance over which the second stage of transportation extends, as the local sanitary regulations may require; but whoever detaches and takes said second coupon must write across the back of the permit, as well as upon the second coupon itself:—

Second coupon taken at (insert name of place or station) by (insert name and title of person.)

Such an indorsement will answer instead of further coupons wherever the body is conveyed: and the permit is to be surrendered at the place of burial. It, as well as every coupon, should be preserved.

Second coupon taken at.....

By.....

SECOND } taken at.....

COUPON } by.....

FIRST COUPON.

Ohio.

THE OHIO STATE BOARD OF HEALTH,  
 COLUMBUS, O., Sept. 20, 1886.

Dr. JOSEPH F. EDWARDS,

*Member State Board of Health of Pennsylvania:*

DEAR SIR: Your letter of inquiry regarding the transportation of corpses long since received, but the press of work required to organize the work of our Board, has delayed an answer until this time. I trust it proves in time for your purpose. I enclose you copies of the only State laws we have. I have inquired, however, of a number of railroad companies doing business in this State, and they all require a certificate from the physician who last attended the deceased, that he or she did not die of any contagious or infectious disease. The law requiring a permit from a board of health is not enforced, and is farcical from the fact that only such towns and cities have a board that choose to appoint one. I am glad my attention was called to this matter, and our Board will endeavor to have the laws regulating this improved.

I am respectfully yours,

P. O. PROBST, *Secretary*

"No person shall convey a corpse to or from any city without a permit from the board of health." (Sec. 2119, Revised Statutes of Ohio.)

"Whoever being lawfully possessed of any corpse for the purpose of medical or surgical study, uses the same for any other purpose, or removes the same beyond the limits of this State, or in any manner traffics therewith, shall be imprisoned not more than one year." (Sec. 7035, Revised Statutes of Ohio.)

The latter but indirectly bears on this question.

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Tennessee.

TENNESSEE STATE BOARD OF HEALTH,  
NASHVILLE, August 28, 1886.

To JOSEPH F. EDWARDS, M. D.,

224 S. 16th Street, Philadelphia, Pa. :

DEAR DOCTOR : In reply to yours of the 19th, I send an extract from the code of Tennessee. Also, I send by mail a copy of second report of this board, see page 14, also page 542, also pages XI-XV. These references I think cover the ground.

Yours truly,

J. BERRIEN LINDSLEY, M. D.,  
Secretary.

CODE OF TENNESSEE, 1884. Chapter 8, Article III.

*Violating graves and dead bodies.*

5658. Any person who wilfully and unnecessarily, and in an improper manner, indecently exposes, throws away or abandons any human body, or the remains thereof, in any public place, or in any river, stream, pond or other place, is guilty of a misdemeanor.

5659. So, also, is every person who removes the dead body of any human being, without lawful authority, from its place of interment, or assists in so doing.

5660. Any person who purchases or receives from any other person the dead body of any human being, knowing the same to have been disinterred contrary to law, is also guilty of a misdemeanor.

5661. So, also, is any person who opens any place of interment with intent to steal the coffin or other coverings of the corpse, or any part thereof, or any thing deposited therewith, or who wantonly mutilates a dead body.

5662. The provisions of these sections do not apply to regular physicians to whom the bodies of deceased criminals are delivered pursuant to law, or to dissection of persons by consent of their relatives.

## Rhode Island.

OFFICE STATE BOARD OF HEALTH,  
PROVIDENCE, *August 20, 1886.*

J. F. EDWARDS, M. D.:

DEAR SIR: In reply to yours of 19th inst., can say that there is no statute in Rhode Island regulating the transportation of the bodies of the dead. All of the cities, however, and a considerable number of the towns require a "permit" from the registrars of death for the removal or burial of the dead. This permit is issued when a return of the death is made and the registrar is satisfied that everything is all right. An understanding has also been had for some years back between the health authorities and the superintendents of the railroads and steamer lines of transportation centering in or passing through this State, that no corpse will be taken for transportation unless accompanied with a removal permit issued by the town or city registrar of the town or city where the death occurred. I have had, during five sessions of the Legislature within the last eight years, a bill introduced for the purpose of making a uniform burial and removal permit law for the whole State. So far, however, the members have been disposed to leave the matter to the several towns.

Yours truly,

CHAS. H. FISHER. *Secretary.*

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Wisconsin.

STATE BOARD OF HEALTH,  
OFFICE OF THE SECRETARY,  
APPLETON, WIS., *August 28, 1886.*

JOSEPH F. EDWARDS, M. D., *224 S. 16 Street, Philadelphia:*

DEAR SIR: Replying to your circular letter of the 19th inst., relative to regulations for the transportation of dead bodies, I enclose copy of a law of the State relative to the same.

The chief railways of the State have also some additional rules which have the approval of this Board, and which are very similar to the regulations adopted by the State Board of Health of the States of Illinois and Michigan.

Very truly yours,

J. T. REEVE. *Secretary.*

## CONTAGIOUS DISEASES.

The State Board of Health desires to call attention to the following important law, and requests all public health officers, physicians and agents of transportation companies, to extend a knowledge of its provisions, and to aid in its enforcement.

*Chapter 168.*

An Act to prevent the spread of contagious, infectious, and pestilential diseases.

The people of the State of Wisconsin, represented in Senate and Assembly, do enact as follows :

SECTION 1. Any person who shall bring, knowingly aid in bringing or cause to be brought, by railroad, steamboat, sailing vessel, stage coach or other public or private conveyance, into any town, village or city of the State of Wisconsin, the dead body of a deceased person, unless such dead body is accompanied by the written or printed certificate of a physician or coroner, clearly stating the cause of death, and unless, when the cause of death is small-pox, diphtheria, scarlet fever or other dangerous, contagious, infectious or pestilential disease, such dead body is also accompanied by the written or printed permit of a lawfully constituted public health authority and by the sworn declaration of an undertaker in writing, that the body of the person deceased as aforesaid is hermetically inclosed in an air-tight metallic coffin or is encased with an abundance of powerful disinfectants according to the written or printed directions of said public health authority so as to render the same entirely innocuous shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be punished by a fine of not less than fifty dollars, nor more than three hundred dollars, or by imprisonment in the county jail not less than twenty days, nor more than one hundred days.

SECTION 2. Agents and employes of incorporated transportation companies, and public or private carriers of whatsoever name or nature, shall not receive for transportation, nor transport, the dead body of any person, except on receipt of duly executed papers showing that the conditions required by section one of this act have been complied with, under the same penalties as therein provided.

SECTION 3. Any physician or any person assuming to act as a physician, who shall issue a false certificate whereby a case of small-pox, diphtheria, scarlet fever or other dangerous, contagious, infectious or pestilential disease may be concealed, shall be deemed guilty of a misdemeanor, and shall, on conviction thereof, be punished by a fine of not less than fifty dollars, nor more than three hundred dollars, and by imprisonment in the county jail not less than twenty days, nor more than one hundred days; and the ignorance of an uneducated practitioner of medicine shall not be pleaded in justification or extenuation of his offense.

SECTION 4. Any person knowingly laboring under small-pox, diphtheria, scarlet fever, or other dangerous contagious, infectious or pestilential disease, who shall wilfully enter a public place or a public conveyance or shall in any way wilfully subject others to danger of contracting his disease, or any person who shall knowingly and wilfully take, aid in taking, or cause to be taken, a child or other irresponsible person while laboring under any of the aforesaid diseases into a public place or public conveyance, or shall in any way know-

ingly and wilfully subject others to danger of contracting any of the aforesaid diseases from such child or irresponsible person, or any person who shall knowingly and wilfully subject others to danger of contracting any of the aforesaid diseases from the dead body of a person deceased thereof, or any person who shall in any way knowingly and wilfully expose, aid in exposing, or cause to be exposed a child or other irresponsible person, to danger of contracting any of the aforesaid diseases, shall be deemed guilty of a misdemeanor and shall be subject to the same penalties as are provided in section one of this act.

SECTION 5. Upon complaint made in writing, under oath, before any magistrate or justice of the peace charging the commission of an offense against the provisions of this act in his county, it shall be the duty of the district attorney to prosecute the offender.

SECTION 6. This act shall take effect from and after its passage and publication, and all acts and parts of acts conflicting with the provisions of this act, in so far as they contravene the same, are hereby repealed.

Approved March 23, 1881.

Published March 26, 1881.

## APPENDIX L.

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### SANITARY CONFERENCES.

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- I. Proceedings of the National Conference of State Boards of Health.
    - A. Organization of Conference.
    - B. Proceedings of First annual meeting.
    - C. Proceedings of an adjourned meeting.
    - D. Report of delegate to the Second annual meeting and to the Thirteenth annual meeting of the American Public Health Association, Ed. Wm. Germer, M. D.
      - (a). Paper of Dr. Benjamin Lee on the debit and credit account of the Plymouth epidemic.
      - (b). Report of Dr. John A. Rauch, on "Coast Defences against Asiatic Cholera."
    - E. Proceedings of Third annual meeting.
  - II. Report of a sanitary conference at Pittsburgh, Thomas M. McFarland, Esq., Attorney to the Pittsburgh Board of Health, Secretary.
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#### I. PROCEEDINGS OF THE NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH.

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##### A. Organization.

During the meeting of the *Sanitary Council of the Mississippi Valley* at Nashville, Tenn., in 1879, steps were first taken looking to the formation of a national organization, to be composed of those engaged in the administration of the health laws in the several States, in order to secure conference and coöperation between the health organizations in all the States in regard to their methods of work, and in the investigation of the causes and the enforcement of measures of prevention of disease.

While, however, there remained the conviction with many of the leading practical sanitarians of the country that such an organization might be made highly useful in promoting the interests of the public health, it was hoped that the newly-created National Board of Health might obviate the necessity for their additional agency. Few, if any, State or municipal health authorities were in a position, financially, to meet the expense which would be necessarily entailed in the maintenance of such an organization, and there was in many cases a want of legal authority to take any positive action.

The work done by the National Board during its period of active existence demonstrated the soundness of this view; and, until the failure of Congress to continue the authority of the board and to make



appropriations for its varied duties, there was no special occasion for this volunteer organization. With the practical abolition of the National Board, however, the necessity for coördinating the separate organizations for the general protection of the public health again assumed pressing importance.

At the meeting of the American Public Health Association in Detroit, Michigan, in November, 1883, an informal conference was had on this subject, between the representatives of various State boards of health, and, without determining whether it was best to create a section in the association or to form a separate organization, it was decided to invite each State Board of Health in the Union to send representatives to a meeting to be held at Washington, D. C., May 7, 1884, to consider the expediency and methods of forming the desired organization.

Drs. J. E. Reeves, of West Virginia, C. W. Chamberlain, of Connecticut, and Stephen Smith, of New York, were appointed a committee to report a plan of organization to that meeting; and Drs. H. B. Baker, of Michigan, and J. N. McCormack, of Kentucky, were made a committee to invite the attendance and coöperation of representatives from each State Board of Health.

In accordance with the arrangements made at Detroit, and on the call of the Committee of Invitation appointed at that meeting, representatives from nineteen States met in the hall of the Section on State Medicine of the American Medical Association, Washington, D. C., at 2 P. M., May 7, 1884.

The following were the representatives in attendance:

Jerome Cochran, Alabama State Board of Health; C. W. Chamberlain, Connecticut State Board of Health; F. W. Hatch, California State Board of Health; J. H. Rauch, Illinois State Board of Health; E. S. Elder, Indiana State Board of Health; R. J. Farquharsen, Iowa State Board of Health; J. N. McCormack, Kentucky State Board of Health; H. P. Walcott, Massachusetts State Board of Health; H. B. Baker, Michigan State Board of Health; C. B. Tyler, Michigan State Board of Health; C. N. Hewitt, Minnesota State Board of Health; J. A. Steuart, Baltimore Board of Health; J. C. Hearne, Missouri State Board of Health; I. A. Watson, New Hampshire State Board of Health; J. P. Conn, New Hampshire State Board of Health; E. M. Hunt, New Jersey State Board of Health; Erastus Brooks, New York State Board of Health; Stephen Smith, New York State Board of Health; T. F. Wood, North Carolina State Board of Health; C. H. Fisher, Rhode Island State Board of Health; C. C. Fite, Tennessee State Board of Health; J. B. Lindsley, Tennessee State Board of Health; J. E. Reeves, West Virginia State Board of Health.

Drs. C. W. Chamberlain, of Connecticut, and J. N. McCormack, of Kentucky, were respectively elected chairman and secretary.

In opening the meeting, Dr. Chamberlain stated that its object was

to consider the expediency of forming, and if it was thought best, to form a national organization based on State representation and composed of the practical sanitary workers in the different States, for mutual aid and advice in regard to their work, for conference and coöperation in interstate sanitary work, and in order, when necessary, to bring the combined influence of the health organization in the various States to bear in securing such concert of action and such national legislation as may be demanded from time to time for the protection of the health interests of the whole country as cannot be secured by the individual States. The American Public Health Association has done a great work and still has a great future before it in its own line. Our work is to make practical use of the knowledge gathered by the present body. There would be no conflict between the two organizations—in fact they should be mutually helpful.

The Committee on Invitation, through its chairman, Dr. Baker, of Michigan, reported that a communication setting forth the object of the meeting had been sent to each State Board of Health in the Union, with an invitation to such Boards to send properly accredited representatives. The result was shown in the representation present—nineteen of the twenty-seven States in which State Boards exist having delegates in attendance.

The Committee on Permanent Organization, through its chairman, Dr. Chamberlain, reported several suggestive plans for that purpose, after which the secretary read a letter from Dr. A. L. Gihon, President of the American Public Health Association, proposing that the organization be formed as a section of that body.

The various plans were discussed at length and, none of them seeming entirely satisfactory to a majority of those present, the same committee, composed of Doctors Reeves, of West Virginia, Chamberlain, of Connecticut, and Stephen Smith, of New York, to which was added Doctors Baker, of Michigan, and Fite, of Tennessee, were directed to consider the matter further, and report to an adjourned meeting to be held on the following day at three o'clock P. M..

At the adjourned meeting, May 8th, the committee on organization submitted the following report, which was adopted:

*Resolved*, That there shall be a national conference of executive officers and other representatives of State Boards of Health, during the meetings of the American Public Health Association, and at other times and places if so desired. All questions shall be determined by votes by States, each State being entitled to one vote. The officers shall be a chairman and secretary.

After a general and rather informal discussion of some of the important questions connected with the work of State Boards of Health, the Hon. Erastus Brooks, of New York, was elected chairman, and Dr. J. N. McCormack, of Kentucky, secretary, for the ensuing year.

The conference then adjourned to meet in St. Louis, October 13, 1884.

**b. Proceedings of First Annual Meeting.**

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In response to the notification of the Secretary, made in accordance with the action at the Washington meeting of organization, the first annual meeting of the National Conference of State Boards of Health was held in the city of St. Louis, beginning on Monday, October 13th, 1884, the Hon. Erastus Brooks, of New York, in the chair, and the following representatives being present :

J. A. Dibrell, Jr., Arkansas State Board of Health; C. A. Lindsley, Connecticut State Board of Health; John H. Rauch, Illinois State Board of Health; W. S. Robertson, Iowa State Board of Health; Pinckney Thompson, R. W. Dunlap, J. McReynolds and J. N. McCormack (secretary of the conference), Kentucky State Board of Health; Joseph Holt, S. S. Herrick, and L. F. Salomon, Louisiana State Board of Health; C. A. Chancellor, Maryland State Board of Health; J. A. Steuart, Health Officer, Baltimore, Md.; H. P. Walcott and S. W. Abbott, Massachusetts State Board of Health; S. H. Durgin, Boston, Mass., Board of Health; Henry B. Baker, Michigan State Board of Health; D. W. Hand, W. H. Leonard and C. N. Hewitt, Minnesota State Board of Health; E. H. Gregory, J. C. Hearne, H. F. Hereford, Albert Merrill, G. F. Bartlett, G. M. Cox and W. B. Conery, Missouri State Board of Health; Irving A. Watson and J. P. Conn, New Hampshire State Board of Health; Ezra M. Hunt, New Jersey State Board of Health; Erastus Brooks, New York State Board of Health (chairman of the conference); Charles H. Fisher, Rhode Island State Board of Health; T. Grange Simons, South Carolina State Board of Health; H. B. Horlbeck, Health Officer, Charleston, S. C.; G. B. Thornton and J. Berrien Lindsley, Tennessee State Board of Health; David P. Hadden, Memphis, Tenn., Board of Health; R. M. Swearingen, Health Officer, Texas; James E. Reeves, West Virginia State Board of Health; S. C. Johnson, J. T. Reeve and B. O. Reynolds, Wisconsin State Board of Health.

On motion of Dr. Rauch (Ill.), the representative accredited to the conference by the Dominion of Canada, and the representatives of the Provincial Board of Health of Ontario, were elected members of the conference, and the roll of those in attendance was then completed by adding the names of Charles W. Covernton, Dominion of Canada, and P. H. Bryce, Provincial Board of Health, Ontario.

The chairman, in opening the meeting, congratulated the members on the large attendance, which he thought indicated the public interest in the health question. It would be idle for him to repeat anything which had been said in the past in regard to the importance of the work of State Boards of Health. He was glad to know that nearly every State in the Union had established its board, and the few States and territories which were at present without boards, are considering

the advisability of establishing them. In the State of New York there are now local health organizations in some 900 of the 1,000 towns in the State. There are also similar organizations in nearly all the 240 villages in the State and in each of the twenty-four large cities.

And this has been accomplished by persuasion rather than by force, although the State gave them unlimited power to establish organizations in every town and village. He foresaw a wide and varied field of usefulness for such an association as the National Conference, and expressed an abiding confidence that its deliberations and action would result in increased efficiency, coöperation of effort, and uniformity in the best methods of practical work among its individual members, each in his own sphere and territory, but all laboring to one common end.

After the reading and approval of the minutes of the Washington meeting, Dr. Hewitt (Minn.) presented a plan proposed by the Minnesota board for completing the organization of the conference, and the main points of which are as follows: The establishment of a body to be known as the *Council of the State Boards of Health of the United States*; the officers to consist of a chairman, corresponding secretary, recording secretary, a treasurer, and an executive committee, the latter to consist of one member from each State board. The objects of the organization to be the cultivation of a closer acquaintance between officers and members, to facilitate discussion of sanitary work, and to give better opportunities for comparing and discussing methods.

Dr. Rauch (Ill.) moved that the plan be referred to a committee of five, of which the chair and secretary be ex-officio members.

Dr. Baker (Mich.) offered an amendment, that the report of the committee be received at the next annual meeting. The motion as amended was then carried, and the chairman announced the committee, as follows: Rauch, of Illinois; Hunt, of New Jersey; Baker, of Michigan; Brooks, of New York, and McCormack, of Kentucky.

A communication from the executive committee of the American Public Health Association, inviting the conference to use the Wednesday afternoon session of that body for the presentation and discussion of papers and reports from the State Boards, was read by the chairman, and, on motion, the invitation was accepted.

In this connection the question arose, and was discussed at some length, as to whether papers prepared for the conference should be reserved for the American Public Health Association.

Dr. Simons (S. C.) said the subject for which the conference had been called together was to discuss the practical work to be done to prepare against the advent of cholera, or to restrict its progress if it does invade our shores. The conference must decide what is best to do, and he was sent to the meeting to take part in this work and to report, on his return, as to the measures proposed or adopted. The American Public Health Association cannot deal with this practical

work; it is an educational body, and has accomplished much good. But it has no authority and cannot act nor enforce action. This can be done by executive State Boards, who are on the spot and are acquainted with the local conditions and the necessities that require sanitary work and legislation.

During the discussion, which was participated in by Drs. Rauch (Ill.), Salomon (La.), Dibrell (Ark.), and Mr. Brooks (N. Y.), it was made clear that the scope and province of the conference differed widely from those of the association; the function of the conference being to bring together men from all parts of the Union who were actively engaged in the practical work of protecting health and fighting disease through certain well-defined agencies—namely, the enforcement of sanitary laws and ordinances, State and municipal; men who were vested with authority and charged with responsibility by law. How can this responsibility be best discharged, and this authority be most efficiently and beneficently exercised? how can remedy for defects in existing laws be secured, and provision made for coöperation with each other and for concert of action in efforts to promote health, and so to make labor and industry and commerce and all other material interests more secure and prosperous?—these are the questions which should occupy the time and attention of this conference. At the present time the work demanding earnest consideration from every sanitary official is the prevention of Asiatic cholera in this country; and it was to this work that the members should now devote themselves.

At the close of the discussion, by general request of the conference, the following address, prepared for special consideration at this meeting, was delivered by its author:

#### PRACTICAL RECOMMENDATIONS FOR THE EXCLUSION AND PREVENTION OF ASIATIC CHOLERA IN NORTH AMERICA.

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By JOHN H. RAUCH, M. D., *Secretary Illinois State Board of Health.*

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·MR. CHAIRMAN: A grave responsibility rests upon those charged with the protection of the public health at the present time. For the past six years—ever since the memorable fever-summer of 1878—the country has been free from any serious and widespread epidemic disease. Small-pox, which prevailed from 1880 to 1883, has been successfully combatted, and its ravages confined to proportions which are insignificant when compared with many other epidemics. Hundreds of thousands of unprotected immigrants were landed on our shores during those years; but the Immigrant-Inspection Service, inaugurated in the spring of '82, thenceforth rendered them comparatively harmless, by securing an improvement in their sanitary status through the effect of the service upon the work of steamship surgeons

during the voyage, and upon the methods at quarantine on arrival ; as well as by its own sanitary surveillance of the immigrants from the port of arrival to the point of ultimate destination or distribution in the great interior—such surveillance consisting of repeated inspections, vaccination of the unprotected, systematic observations of suspicious sickness, prompt isolation of discovered small-pox or other contagious disease, and the enforcement of measures necessary to prevent its further spread. Among our own people outbreaks of the disease were promptly suppressed wherever sanitary authority had control, and well-defined methods of dealing with the contagion were enforced. On the other hand, while we have fought small-pox and conquered it, we have been spared from any serious conflict with yellow fever. Nor have other diseases prevailed to an unusual extent, as they do so often in the absence of an epidemic. On the contrary, the average annual death rate has been low, and during the past year remarkably so.

This very fact should be, in itself, a warning to the sanitarian. It means a survival of a large number of persons who would have been carried off had the non-epidemic diseases maintained their usual severity. It means the accumulation of susceptible material ready for the prey of epidemic contagion, whenever such contagion shall be introduced under conditions favoring its propagation and spread. It is one of the most important factors in determining the extent and severity of the next epidemic, whatever that may be and whenever it may visit us.

But, for a period of six years sanitary effort and sanitary authority have had no unusual demand made upon them, or at least no demand which the public recognizes as unusual. And during these six years the interest in sanitary matters, which was aroused by the epidemic of 1878, and which, among other causes, led to the formation of many of the present State Boards of Health, and to the creation of the National Board, has gradually diminished as the memory of the epidemic faded away, or was displaced by other and newer topics and occurrences.

One of the chief reasons why sanitary work fails to receive continuous and adequate consideration and support from the public and from the legislator, is that, in its very essence, it is a work of prevention ; and just in proportion to its own success and thoroughness does it destroy the obvious and palpable reasons for its continuance. When an epidemic actually exists, and industry and commerce are paralyzed in its presence, and the death roll swells from day to day, there is then no question in the public mind about the desirability of sanitation, no hesitation as to making appropriations for its support, or enacting legislation to increase its efficiency.

But Rabelais told us, nearly four hundred years ago, what always happens whenever the devil gets well. And Congress adjourned its

last session, not only without doing anything additional for the protection of the public health, but after substantially annulling and rendering inoperative the only national legislation of any real value which we possessed.

However, there is a revival of public interest in these matters within the past few months, due to the spread of Asiatic cholera in Southern Europe; and it is our present duty, as sanitary officials, to utilize and direct that interest to the securing of adequate legislation and intelligent action for the prevention of the introduction of the pestilence to our shores, and its limitation, should it unfortunately effect an entrance. Much has already been done in the latter direction, by the action of State and local health authorities in pushing the sanitary education of the people through circulars, memoranda and other modes of appeal. Since the second of July last, such circulars from sixteen States and from the Dominion of Canada have already come under my notice. In many instances, sanitary inspections of municipalities, public institutions, jails, almshouses and kindred establishments have been ordered and carried out, with the view of securing the abatement of nuisances and remedying defects in the sanitary conditions thence disclosed. An amount of sanitary work has been thus already accomplished, which, aside from any consideration of cholera, will be of great value in reducing sickness and mortality from the entire list of diseases which are caused or favored by filth and other insanitary conditions. As a recent number of the N. Y. Medical Record says: "There is no doubt that extra cleanliness produced by the cholera scare will effect a saving of life from other filth diseases far in excess of the mortality from the cholera itself, unless, indeed, it should spread beyond all expectation."

This work should be continued, and the measures which have already been inaugurated, looking to improvement in general and local sanitation, should be pushed with unabated vigor during the favorable weather we may yet have; and they should be resumed with redoubled energy whenever climatic conditions permit. It is not necessary to go into details as to this work; we are familiar with its requirements and its necessity. It is a work of continuous interest and importance, whether cholera should come or not.

With theories and speculation as to the causation of cholera, or as to its mode of diffusion and epidemic spread in the countries of the Old World, this conference is not specially concerned. It is enough for us to know, as the basis of our action, and the foundation for practical recommendations and advice, that the disease is not indigenous to this continent; that it is an exotic, and has never yet visited us except by importation, and that only after ample warning.

It may be entirely true that, if all our food-supplies were wholesome, and our water-supplies not only unpolluted but unpollutable; if sewage and refuse disposal were prompt and complete; if our cities,

towns and villages were all models of sanitary perfection, and their inhabitants free from predisposition or susceptibility, acquired or inherited—in short, that if there were no ignorance, nor poverty, nor filth, nor infirmity in the land, we might dispense with precautions against the introduction of disease.

But the sanitary millennium is not yet, and we are hardly likely to witness its advent before next spring or summer, no matter how earnestly we may labor for it. So, for the present, at least, as a practical sanitarian accustomed to deal with conditions as they actually exist, I think the wise thing to do in respect of cholera is to resist the first beginnings—*obsta principis*.

It is no doubt well to be prepared to expel the midnight burglar from one's dwelling; it is better to keep him out by locks and bolts and watchful patrols. If people must live among combustible material, it is a prudent thing to forbid smoking on the premises, and to be careful about matches and other incendiary agencies, the contagion or contact of which may kindle a conflagration.

Until we can very materially change the conditions which cause considerably over one-half the annual mortality, it is our simple duty to adopt whatever measures promises a fair degree of success in excluding the foreign epidemics. Such typical filth diseases as typhoid fever and diphtheria carry off sixty odd thousand people every year; and during the census year the ten principal groups of more or less preventable diseases caused over 470,000 out of the total 756,000 deaths in the United States.

With such a showing it is simply nonsense to talk]about relying upon sanitary measures alone to combat a disease like cholera. Let us push sanitation by every means in our power, and to the fullest extent. Not, however, with any hope that we can effect such a sanitary revolution in a few months as would prevent cholera, if introduced, from spreading as an epidemic in many localities, which, in the nature of things, cannot be reformed in many months. But rather in the knowledge that every sanitary reform tells permanently and continuously on the whole body of preventable diseases; and that to the extent and measure of such reforms are the conditions made more favorable for the exclusion and prevention of all epidemics.

That cholera *will* come, it is our duty to assume. Mindful of the history of every previous cholera epidemic, we must accept as beyond a doubt—if experience is worth anything—the certainty that the disease will be brought to our shores. It always has come, sooner or later, whenever, since 1832, the contagion has obtained such a foothold in Europe as it now has.

Sooner or later, and we cannot tell how soon. Cholera was brought to Marseilles in the early part of June, 1865, from Bombay via Mecca, by pilgrim-steamers conveying Algerine pilgrims returning home from the feast of sacrifices at the "holy city," and spread so rapidly that,



during the month of October, it caused between four and five thousand deaths in Paris. On the 12th of that month the steamer *Atalanta* left Havre with over 600 cabin and steerage passengers all of whom had been in Paris, and on her arrival in New York bay she had had 102 cases of cholera and twenty-three deaths. So that the disease was brought from its endemic home in India, by way of Mecca, Marseilles, Paris and Havre, to New York in less than nine months.

It is probable that we do not know how widely spread the disease is upon the continent, nor what places and ports are infected. The *London Lancet* recently stated that it has transpired that there were deaths from Asiatic cholera in Marseilles during 1883, and Dr. Albert Drysdale, health officer at Mentone, writes to that journal corroborating the statement from his own personal observation, having been taken to see a case in October, 1883, by a medical friend. Attendants, nurses and all others cognizant of the facts were sworn to secrecy. Still more recently, French naval officers have frankly stated that cholera existed on their vessels at Toulon long before the fact was made known last spring. In 1873 the existence of cholera was concealed in Austria on account of the great Vienna exposition, and although the disease is now known to have been spreading from place to place from early in the spring, it was not until midsummer that any warning was sounded of an epidemic which caused 240,000 deaths in the Austrian dominions alone.

I repeat that we may not know how widely spread the disease now is on the European continent, and that we do not know how soon its arrival on our own shores may be announced. It is not probable, however, that it will reach us before next spring, and we may pretty safely count on some months yet in which to push our preparations to meet it and to resist its advance. Even though a few cases should now be received, the season is so far advanced that they probably would cause no epidemic spread.

I began my remarks with the statement that a grave responsibility rests upon the sanitarian at the present juncture; but there is an equally weighty obligation resting upon the public and upon our legislators. I undertake to say, as a sanitary official of nearly twenty-five years' experience in the practical administration of sanitary matters in city, State and Nation, and after more than a third of a century of study and observation of the disease, beginning in 1850—that Asiatic cholera may be practically excluded from the United States: That it is preëminently a quarantinable disease: That, with a judicious employment of agencies which have already been tested, Asiatic cholera may be quite as successfully dealt with in this country as small-pox, and probably more so than yellow fever.

Whether cholera shall be excluded—whether the means and agencies necessary to deal with it shall be supplied—are questions which the public must answer through their representatives in Congress, in State

Legislatures, and in their municipal councils ; and I propose in the remaining portion of these remarks to endeavor to point out what means and agencies are necessary to the end in view ; premising that, in their consideration, it should be remembered that sanitary science is comparatively modern ; that the sanitary organizations of the present day had no existence in the days of the great epidemic visitations of cholera in this country ; that within the past few years there has been a rapid and wide-spread diffusion of sanitary knowledge among the people ; and that, even as late as the last cholera epidemic in the United States, that of 1873, no organized effort was made to prevent the importation of the disease, and practically little or nothing done to prevent its extension ; certainly, no such measures have ever been employed, either to prevent its introduction or to limit its spread, as we have recently successfully employed against small-pox and yellow fever.

Asiatic cholera—so far as this country is concerned—is preëminently a quarantinable disease. Unlike the virus of small-pox, unlike the poison of yellow fever, the morbid potency of the cause of Asiatic cholera—whatever that cause may be—is sharply limited as to duration. Failing to find suitable conditions for its growth and reproduction, it *dies out*. No single case, no single shipload of cases ever succeeded in establishing an epidemic in this country. I know this is contrary to the received opinion and popular belief ; but I ask you to follow me in a brief resumé of the facts concerning each epidemic, beginning with 1832. That epidemic is attributed to the ship Carrick, which arrived at the Grosse Isle quarantine station in the St. Lawrence river on the 3d day of June, 1832. But six days before that, the ship Elizabeth had arrived with two hundred immigrants on board, and having had twenty cholera deaths during the voyage. Fourteen days before the Elizabeth, the Robert had arrived with ten cholera deaths ; and sixteen days before the Robert—that is on the 28th of April, thirty-six days before the arrival of the Carrick—the ship Constantia arrived, having had twenty-nine cholera deaths during the voyage. These are all known to have been cholera-infected vessels, and their hundreds of passengers were known to be cholera-carriers ; but these passengers are only a small fraction of the 30,000 immigrants who arrived in the St. Lawrence during the spring and early summer of 1832, from the same infected localities and sailing from the same infected ports as the passengers of the Constantia, the Robert, the Elizabeth, and the Carrick. And yet they failed to develop a single case in Canada or elsewhere until the 8th day of June. The introduction of the disease into New York is attributed to Canada ; but the same class of immigrants from the same localities in Europe, were arriving in New York during the spring of 1832, as those in the St. Lawrence. And yet no case of the disease occurred in the city or vicinity until June 13th.

In 1848, the noted cases of the New York and the Swanton occurred—the former carrying cholera into New York, the latter into New Orleans; and to them is attributed the epidemic which, in the two succeeding years, spread from the Atlantic to the Pacific and from Canada to the Gulf. But the importation by the New York, though causing fifty deaths at quarantine, resulted in only two cases in New York city, and it was not for months afterward—not until the 11th day of May, 1849, and after the arrival of several other ships with cholera on board, that the first case appeared in the city, and the disease began to spread from that point. On the other hand, immigration from cholera-infected districts of Europe into New Orleans had been continuous for months before the arrival of the Swanton—the two vessels immediately preceding her, viz: the Gutenberg and the Callao, having lost twenty-five passengers from cholera.

From this time until the close of what is generally known as the epidemic of 1854, but which was really only a continuation of the epidemic of 1848–49, there were continual importations of cholera-carriers, either in the persons of those who had been exposed, or in cholera-infected articles; in November, 1853, for example, no less than twenty-eight vessels, on which 1,141 persons had died of cholera, arrived at the port of New York alone.

The case of the *Atalanta*, in 1865, has already been noted; but it should be further observed that there were three other arrivals at New York from Havre soon after, and on the last two of these there were deaths from cholera during the voyage; but the disease got no nearer the city than Ward's Island, and by the 20th of December had entirely ceased. In 1866, cholera was carried into Halifax by the steamer *England*, which vessel afterward proceeded to New York, where, on the 20th of April, she landed 891 passengers and 116 officers and men, having lost 316 by cholera. There were eight cases and five deaths among those who had to do with the vessel at Halifax, but no other extension of the disease, and none in New York. Two days prior to the arrival of the *England*, the *Virginia* had arrived at New York quarantine, having had 116 deaths on the voyage; and before the first death of the epidemic of 1866 had occurred, namely May 2, there had been nearly 3,000 arrivals in New York of individuals "who had been directly exposed to the infection of cholera at Liverpool, on shipboard, and at quarantine." Notwithstanding this, so slowly does cholera spread, except under favorable conditions, that there had been only twenty-one deaths from the disease up to July 8; and it was not until the first week in July that the disease appeared in Brooklyn, although there were frequent arrivals of cholera vessels, during all this time.

The epidemic of 1873 was preceded—*fourteen months before the first case of the epidemic occurred*—by the arrival of the *Franklyn* at Halifax, November 6, 1871, in distress, having lost twenty-eight of her

steerage passengers by cholera. Five cases, with three deaths, resulted from her on shore, but the disease did not spread, either in Halifax or vicinity. The vessel proceeded to New York, where she arrived November 12th, 1871, having lost eleven more of her passengers, and having seventy-two cases then on board. But no epidemic followed. During 1872 there were numerous arrivals from cholera-infected ports, and the disease appeared on the island of Cuba and in Jamaica in the autumn of that year. During December, 1872, and January, 1873, there arrived at New Orleans a total of nearly two thousand immigrants from cholera-infected districts of Europe. And yet it was not until the 9th day of February, 1873, that the initial case of this epidemic occurred in the city of New Orleans.

No single case of cholera, no one shipload of cases has ever yet sufficed to establish an epidemic of Asiatic cholera on this continent. It has only been after repeated importations in the persons of thousands of immigrants and in their infected baggage and household goods, that the contagion has effected a lodgement, and has reproduced itself and multiplied into an active epidemic agency.

Hence my first proposition, that, for this country, the disease is essentially and preëminently a quarantinable disease, and may be practically excluded. If it were true of the cholera poison, as it is of the small-pox contagion, that favorable conditions for its spread exist wherever a susceptible individual is found, without reference to the sanitary surrounding, we should have no such history as I have just recited,—a history of repeated importations extending over months and months before it succeeded in establishing itself.

It will not do, however, to construe this tardy establishment of the contagion into an excuse for delaying measures of preparation—neither those for its exclusion, nor those for its limitation and suppression, should we fail to exclude it. Cholera is a capricious disease, and the history of its various pandemic extensions throughout the Old World affords instances of a single introduction sufficing to inaugurate an epidemic. Fortunately, the conditions favorable to such a prompt epidemic spread do not obtain with us, except in a few localities. Populations are not so dense, nor are dwellings so saturated with crowd-poison, nor is the soil so thoroughly polluted by long occupancy. Where these evils exist they should be remedied forthwith to as great an extent as practicable, in order that, among other good results, the conditions favorable to the growth and multiplication of the cholera-poison may be destroyed or limited.

It is charged that quarantine is powerless to prevent the extension of epidemic diseases; that, in the language of John Simon, "a quarantine which is ineffective is a mere irrational derangement of commerce;" and that to be effective it must be of such a nature as to absolutely prevent all intercourse with the infected country. This may be true of Great Britain, owing to her geographical position, to

her extensive commerce and its exigencies, to her comparative dependence on other countries for her food supply; and to other conditions which do not obtain with us. It may also be true of Europe generally. There, a narrow strait or sea, a river, a mountain chain, or merely a territorial boundary line, with its custom houses and passport system, defines the limits to be guarded, and forms the only physical barrier between the quarantiner and the quarantined. Here, the whole width of the Atlantic intervenes between us and the infected country. There, cordons and quarantines mean privation, misery and suffering, and ultimately, starvation. Here, the nation is self-supporting, and could exist unaffected in almost all her material interests. There, it may be true, as alleged, that a quarantine of exclusion is impossible of execution, and that the attempt to maintain it does more harm than good, in leading to numberless contraband practices by which the disease may be introduced in unsuspected ways.

None of this is true when applied to the exclusion of Asiatic cholera from this country; while to accept the statements unquestioned would cause vigilance to be relaxed, would invite contagion to our shores unimpeded, and would finally throw upon individual communities the burden and the responsibility of fighting the disease at an immense disadvantage—that is, of fighting it at home and from many quarters, instead of on the outer lines and from only one direction.

With the necessary agencies of an effective quarantine provided in due season, it would not require any very great degree of courage to promise the practical exclusion of the disease.

These necessary agencies may be thus stated in their natural order of sequence:

First—Timely and trustworthy information of the existence of the disease in countries and at ports having commercial relations with our own, including telegraphic advices of the departure of vessels from such ports for ports in this country. Section 1752 of the Revised Statutes of the United States gives the President authority to use all diplomatic and consular officers for the communication of information \* \* \* conducive to the public interests;” and instructions have already been issued under this authority.

To properly utilize this information, in fact, in order to fully secure the information, there needs to be—

Second—A national health organization, representing the natural sanitary divisions of the country; endowed with adequate authority; supplied with means commensurate with the duties imposed upon it; and with the power to call upon any other branch of the public service of the United States, for legitimate assistance and coöperation. With some modifications the present National Board of Health would satisfactorily meet this indication. In my judgment its membership should be enlarged so as to more perfectly represent the natural sanitary areas, and its members should be familiar not alone with the

sanitary features of their respective districts, but equally they should be identified with the commercial business and industrial interests.

Under this national health organization there should be extended and perfected—

Third—The system of Refuge Stations projected by the National Board of Health. With two or three exceptions, no port in the United States has adequate facilities for the proper administration of quarantine. Such a system as was inaugurated by the National Board of Health, and which is the only quarantine contemplated in these remarks, involves the removal of an infected or suspected vessel out of the track of commerce; the segregation of her sick from the well; the proper care and shelter of both these classes; the necessary disinfection of infected cargo, and the purification of the vessel, and the release of vessel, cargo and persons, so soon as they have been rendered safe and free from the danger of communicating disease.

This is very different from a mere quarantine of detention. It is the American quarantine of sanitation, a common-sense quarantine, which aims to prevent the introduction and extension of contagion, not by merely arresting it at a given point and there leaving sick and well at its mercy until, the susceptible material having become exhausted, no more cases of the given disease occur; but by removing the susceptible at once from its influence, and then destroying it and the conditions necessary for its existence by scientific methods of disinfection and purification.

To do this, however, requires a quarantine plant and facilities far beyond the means of any but the largest ports, supported either by abundant quarantine fees or by adequate appropriations from the State or municipality. But cholera may obtain access at a small port as well as a large one, and hence the necessity for the Refuge Stations above indicated.

Under the system here outlined the departure of a vessel from a cholera-infected port would be at once cabled to the National health officer; the authority at the port of destination would be duly notified; pilots for such port would be ordered to take the vessel to the nearest Refuge Station; and at such station, under the charge of a National officer, and at the expense of the National government, she would be so treated as to make it impossible that she could land cholera-contagion in our midst.

So much for the measures which should be adopted for the exclusion of the disease—measures which have already been practically tested sufficiently to demonstrate their feasibility and value. But before dismissing this branch of the subject it will be well to consider the possibility that it may be necessary to absolutely prohibit immigration, for a time at least, from infected countries. Every one of our cholera epidemics has been directly and unmistakably traceable to the arrival of immigrants infected in person or in baggage and

household goods. It was the crowded troop-ship and transport which brought the contagion into France and China and Egypt. It is the crowded pilgrim-steamer and passenger vessel which carries it from Bombay and Calcutta into Europe and elsewhere, as already instanced. It is the steerage of the emigrant vessel, with its crowd poison and other conditions favorable to the development of a specific contagion, which we have to fear. This contingency is one of the most important against which National legislation should be provided next winter.

I have said that I believe Asiatic cholera may be as successfully dealt with in this country as small-pox—notwithstanding that we have no such demonstrated prophylactic for the former, as vaccination is for the latter disease; that it may, probably, be more successfully dealt with than yellow fever—notwithstanding that this is limited by climate and temperature, while cholera is independent of the one and only measurably affected by the other. I believe this to be the case as the result of my own official experience. In the last two epidemics of cholera, the disease was controlled wherever it appeared in the localities under my supervision, by the adoption and enforcement of the simplest measures. Surface wells were fouled with carbolic acid, so that their use for drinking and culinary purposes was necessarily abandoned, and a pure water supply was provided instead. Every house where a case of cholera appeared was promptly taken charge of by the sanitary authorities; the patient was isolated; discharges were thoroughly disinfected and buried; all other sources of infection were carefully looked after, and the premises, generally, were put in the best attainable sanitary condition, and with marked results upon the extension and progress of the disease. Every community, for itself, may readily provide a similar mode of dealing with a cholera outbreak, should the disease, unfortunately, be introduced.

But something more than this is needed in order to perfect the sanitary defense of the whole country. For this we must have co-operation and concert of action. We must devise a plan whereby the limited and individual powers of communities and States may supplement each other and act harmoniously and efficiently for the common welfare. In the exercise of its police powers—upon which all its sanitary laws and ordinances are founded—the municipality is confined within its own limits, or, for certain purposes, to a short distance beyond. The power of the State is in like manner limited by its own boundary lines.

In the absence of a National health organization, with power to act without reference to State lines and with resources to meet every emergency, the best we can now do is to form an organization of all those clothed with sanitary power and authority, both State and municipal:—an organization which shall give effect to the principle

that we are each our brother's keeper in whatever pertains to the prevention of the introduction and spread of epidemic contagion. Such an organization as the Sanitary Council of the Mississippi Valley, supervising—and if need be maintaining—a system of sanitary surveillance similar to the River and Rail Inspection Service in the Valley, and the Immigrant-Inspection Service of the recent small-pox epidemic, will be of great value in a two-fold manner.

It will enable State and municipal authorities to aid each other and to make their rules and regulations substantially uniform, and thereby to secure the coöperation and assistance of transportation companies and other commercial interests, whose business success depends so largely on freedom from unnecessary interruption or conflicting and changing restrictions. It will be of positive sanitary value in the moral pressure exerted on the individual agents of travel and traffic.

Here in the Valley, a great improvement in the sanitary conditions of steamboats, barges and river craft, and, to a minor degree, in the care of railway cars, depots and out-buildings, followed the knowledge that the detention for inspection depended upon the experience of the inspector with regard to the particular boat or line. In the same way the conditions of immigrant travel were sensibly improved by the Immigrant-Inspection Service, not only on our railroads, but on the ocean steamers themselves. Its effects were also manifested in the administration of the seaboard quarantines, to which the Service was a direct help in securing a prompter and more general compliance with the quarantine requirements of the different ports.

This latter point is one of great importance to the interior. Illinois, for example, is as much interested in maritime quarantines as are communities bordering upon the Atlantic and the Gulf of Mexico. During my own official experience the State has repeatedly suffered from the laches and inefficiency of their administration. Her sanitary interests are protected or endangered through them along the whole line from the mouth of the St. Lawrence to the mouth of the Mississippi, and even to the Rio Grande. Means of communication and intercourse are now so multiplied that time and space—in respect to contagious diseases—are practically annihilated; and methods which might have sufficed for the protection of the interior twenty-five years ago would be, to a great extent, valueless to-day.

In 1873, for example, there were outbreaks of epidemic cholera at Carthage, Ohio, in Kandiyohi county, Minnesota, and at Yankton, Dakota, caused by cholera-poison packed up in the household effects of emigrants in Holland, Sweden and Russia, respectively; these emigrants sailed from healthy ports, in healthy vessels, and were subjected to the usual sanitary requirements of the period. They passed



through New York and all the intermediate territory without injury to the public health. But when their infected goods were unpacked in the interior of the continent they liberated the poison which gave rise to the local outbreaks.

To guard against a possible recurrence of such importations—which have been often paralleled in my experience with regard to small-pox among immigrants, and through which importations, both of cholera and small-pox, the interior is affected while the port of arrival escapes—no ordinary system of quarantine, controlled by a State or municipality alone, will suffice. Prompt and trustworthy information, such as the general government only can obtain, concerning the sanitary history of all emigrants during the existence of cholera in Europe, is obviously necessary to this end.

Sooner or later the National government will be compelled not only to assume supervision of exterior quarantines, but to provide for a permanent system of coöperation with State and local governments in the administration of inter-State sanitation; in order, on the one hand, to prevent the introduction of exotic epidemic diseases, and, on the other, to prevent their spread from State to State along the great intra-national highways of travel and commerce. This is a national duty. It is one that the national government only can adequately discharge, and its expense is, equitably, one which should be defrayed from the national treasury.

Such an organization as I suggested will be one agency for securing the assumption of this duty by the general government; and the present emergency offers a favorable time for pressing its consideration. Heretofore, legislation in the interest of public health has been obtained as a rule, at the tail-end of an epidemic. It has too often been in the nature of a locking of the stable-door after the horse was stolen. Let us now see if we cannot reverse the process, and, while there is yet time, induce not only Congress, but States and municipalities to take the necessary action for securing a better protection of the public health.

Just now this means more than the good to be found in the saving of human life and in avoiding the suffering and misery, the ruined homes and desolated families which an epidemic always leaves in its track. It means the prevention of panic; it means the prevention of the interruption of trade and commerce; it means the prevention of the loss of millions of dollars, all of which would inevitably result from an epidemic of Asiatic cholera in this country. Already the disease has cost Southern Europe not less than a hundred million dollars—six million dollars up to October 1st in trying to prevent its spread in Italy alone, with a loss of four million dollars even in the month of August, before the disease had effected a serious foothold; and now it is announced that the decrease of the national revenues of France has been materially aggravated by the reduction of receipts from rail-

ways, caused by the cessation of travel consequent upon the prevalence of the cholera epidemic. And yet Europe is only upon the threshold of this epidemic, if we may judge from the past.

Shall we be warned in time, or shall we wait until the pestilence has landed and obtained a foothold? A single outbreak—possibly a single case—of Asiatic cholera in New York, or Chicago, or St. Louis, or New Orleans, in our present condition, would cost the country millions of dollars, even though no epidemic spread should result.\* With a perfectly feasible quarantine system, whose entire cost would not be a tithe of this sum, the chances of that single case may be made exceedingly remote. With an adequate sanitary organization—embracing within its scope the national authority, the State and the municipal, each in its respective sphere—not one case, nor one hundred could establish an epidemic. Such an organization of the sanitary defences would inspire public confidence and prevent panic in the face of real danger—and panic is one of the worst complications of a cholera epidemic, as fear is one of the most potent predisposing causes of the disease.

No comparison is possible between the most liberal estimate of the cost of the methods of exclusion and suppression here proposed and the cost of an epidemic. The money cost in both cases, may, it is true, be calculated; but who shall place a dollar-and-cents' value on the lives which would be sacrificed, and the suffering entailed by an epidemic of Asiatic cholera?

Our duty, our responsibility, and our opportunity, seem to me plain and obvious. So far as pushing general and local sanitation go, I believe we are doing fairly well; and to this extent we are reducing the chances of the spread of cholera, should it effect a landing through defective or wanting quarantine provisions. The next work that lies close to our hands is to inform the public as to the necessity of securing adequate legislation—National, State and municipal.

Congress must be urged to reorganize and rehabilitate the National Board of Health, or to provide an efficient substitute—one clothed with increased power and supplied with ample funds to maintain an effective system of modern sanitary quarantine for the exterior; to maintain an interior sanitary inspection service for the great highways of travel by land and water; and to give judicious coöperation and substantial assistance to States and municipalities in preventing the introduction of epidemic diseases into one State from another, and in preventing their spread within the States themselves.

Congress should give the President the power to issue a proclamation, upon the recommendation of the national health authority, forbidding immigration into the United States from infected districts of

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\* In 1879 the report of a single case of yellow fever in the south caused a shrinkage in the provision market, in Chicago alone, which amounted to a million of dollars within twenty-four hours.

other countries, and it should provide some method of international sanitary coöperation between this country and the Dominion of Canada, whose interests are substantially the same as ours in these matters, and whose contiguity makes coöperation of vital importance.

In States which now have no boards of health, or whose boards are not vested with the necessary authority or provided with adequate resources, the people should be awakened to the necessities of the situation. Legislators should be thoroughly informed as to the facts and urged to provide suitable legislation.

Information on sanitary matters should be widely diffused to this end, and also to the end that, if an epidemic should come, we may not have to encounter the obstacles which ignorance is always ready to put in the way of what it does not understand. Happily, in this country we are not likely to meet with the treatment that the superstitious peasantry of France and Italy have accorded their physicians and health officers. But sanitary education and knowledge cannot be too widely spread.

These are matters which may profitably occupy much of our time and attention for the next two months; and I would suggest that when this meeting of the conference adjourn, it be to meet again in Washington early in December, for the purpose of conferring with the President, the proper cabinet officers and the committees of the Senate and House as to the legislation which should be asked for at the next session of Congress. To this meeting I think not only should representatives of State Boards of Health be invited, but also all quarantine officers and the health authorities of the large cities, as well as those of the Dominion of Canada. I would also suggest that quarantine officers and those who are responsible for the local sanitation of towns, cities and States should be requested to come prepared to give all necessary information concerning the quarantine and sanitary affairs of their respective ports and localities.

The address of Dr. Rauch was discussed by Drs. Dibrell (Ark.), Covernton (Can.), Lindsley (Tenn.) and Mr. Brooks (N. Y.) At the close of the discussion Surgeon Smart, U. S. A., read the following paper, by special invitation :

#### QUARANTINE AND SANITARY METHODS FORMULATED BY THE NATIONAL BOARD OF HEALTH *in re* ASIATIC CHOLERA.

By CHARLES SMART, Surgeon, U. S. A., Member N. B. H.

The National Board of Health based its rules and regulations to prevent the introduction of cholera into the United States, and its spread from one State to another, upon the following facts, which science and experience have demonstrated. viz :

1. Cholera is caused by a specific germ.

2. This germ must reach the bowels in a living state.

3. This germ maintains its vitality and toxic properties under many conditions, the most important being :

(a) In the immediate discharges from the bowels of the sick.

(b) In the soiled clothing of the sick and of the beds they occupy.

(c) In the privies and cesspools which receive the discharges, and

(d) In soil and sub-soil waters which become secondarily contaminated.

4. The germ may be destroyed with no other interruption to travel and traffic than is needful to determine the likelihood of its presence and to apply the necessary measures for disinfection.

Guided by these principles, the National Board of Health organized the following system of preventive measures, and experience has confirmed its convictions that they comprise the essential sanitary acts necessary to the complete suppression of cholera.

*1st. International Coöperation.*—The Board early discovered that there would be serious practical difficulties in the administration of rules and regulations recommended by sanitary experience and framed by the legislation of the country to the end of preventing the introduction of foreign pestilence into the United States without the consent, and, as far as possible, the aid and coöperation of other commercial nations. It accordingly took steps to secure this, and a conference was held under the joint authority of both houses of Congress.

The discussion proved that, of the twenty-seven nationalities represented, by far the larger number were prepared to enter into a formal joint treaty that would secure harmony of action in the enforcement of certain important measures for their mutual protection against an invasion by cholera. Too much importance cannot be attached to the coöperation of nations in measures of prevention against the spread of contagious and infectious diseases along the routes of travel and commerce.

*2d. Measures to be adopted at Foreign Ports.*—The first act of the National Board of Health was to frame rules and regulations to be enforced at foreign ports to secure the best sanitary condition of the vessels about to leave for a port of the United States.

This measure is the true basis of success in efforts to prevent the importation of contagious diseases. Ships are the great carriers and propagators of diseases of foreign origin. Crowded with passengers and freight, saturated with putrescent filth, and heated to the requisite temperature for the active growth and multiplication of the germs of disease, the modern emigrant ship is a fertile field for the cultivation of pestilence.

The rules and regulations prescribed by the Board required that each consular officer of the United States in a foreign port, or a medical officer specially detailed by the President for duty at the consulate, should keep himself thoroughly acquainted with the sanitary condi-

tion of the port and vicinity, especially with regard to the presence of cholera, yellow fever or plague, and of the existence of typhus or small-pox in epidemic form. On the request of any master, owner or agent he was required to make an inspection of any ship or vessel bound for the United States, and to give a certificate or bill of health based on the condition of the port and the result of the inspection. This examination into the sanitary condition of the vessel was required to be made before the cargo was taken on board. The certifying officer was directed to see that the vessel was dry, clean, free from decayed wood, and thoroughly disinfected if last from an infected port, or if the port of departure was itself infected. The shipment of merchandise or articles known to be infected was prohibited, and ballast was required to be approved by the certifying authorities. If the port was infected the passengers underwent medical inspection not more than twenty-four hours before the signing of the bill of health, which was considered valid only if delivered within the twenty-four hours last preceding departure. The bill of health set forth the sanitary history and condition of the vessel; and, if the bill was a clean bill, it was certified that the vessel left the port in free pratique; while if the bill was a foul bill, it was certified that the vessel left the port in quarantine.

A clean bill of health was authorized when the vessel's condition was satisfactory and the port free from infection. A foul bill was given when, on the contrary, the port was infected or the condition of the vessel unsatisfactory. In all cases of doubt as to the infection of the port a foul bill was directed to be issued; but the existence of infection in the quarantine establishment of the port was not considered cause for a foul bill of health. On the departure of the vessel from an infected port her name, date of sailing and port of destination were telegraphed to the Board by the certifying officers.

*3d. Sanitary Service at Sea.*—Second only in importance to securing at the foreign port a clean vessel and uninfected freight, with the crew and passengers in healthy condition, is a sanitary service at sea that shall preserve the cleanliness of the ship and the health of the crew and passengers, and arrest or isolate the first case of sickness. Every effort should at this time be made to induce steamship companies to hold their medical and other officers responsible for cleansing and ventilating their ships during the voyage, and for daily inquiry as to the health of every person on board. Diarrhœal affections should be promptly isolated and carefully located, all intestinal discharges being immediately disinfected and thrown into the sea.

*4th. Measures Recommended to be Adopted on the Arrival of the Vessel at a United States Port.*—Although the word quarantine is in common use in connection with these measures, the Board in its use did not imply detention for any specified time, but only for such

time as was needful to determine the presence or absence of infection in vessels arriving at our ports, and to effect, if present, its destruction or removal.

Every vessel should be visited by the quarantine officers, and if cholera or other infectious disease existed at the port of departure, or at any port at which she had touched during the voyage, or on any vessel with which she had come in contact. such of the crew and passengers as were infected should be removed to hospital and the others to proper quarters. The clothing and baggage should be carefully disinfected, the cargo discharged and disinfected, and after the thorough cleansing and disinfection of the vessel the cargo may be reshipped and the vessel permitted to depart.

*5th. Sanitary Supervision of Travel and Transportation, Coast-wise and Inland.*—If, notwithstanding these measures to exclude infection, the disease should effect an entrance into any of our ports [as small-pox and yellow fever had done] measures should be taken to prevent its spreading from that port to other ports on the coast, or to the interior points. Seacoast, river and railroad travel and transportation should be conducted under sanitary supervision. In the case of coast or river steamboats or vessels sailing from the infected port, measures of inspection and disinfection should be enforced similar to those practiced at foreign infected ports, the utmost cleanliness urged during the voyage, and the importance of frequent inquiry into the condition of the passengers and crew impressed upon the officers of the vessel.

In addition to this, inspection stations should be established at certain points as they were on the Mississippi river with reference to yellow fever. The medical officers at these points acted as quarantine officers for the States threatened with invasion. Every vessel was boarded; any change in her sanitary condition since leaving the port of departure was noted on her bill of health, or if needful she was moved to a refuge station for the isolation and treatment of the sick, and for the discharge of cargo and thorough disinfection prior to continuing her voyage. On the arrival of the vessel at the port of destination she was subject to the action of the local authorities, who were recommended to adopt measures similar to those in force in the case of vessels arriving from foreign infected ports.

Railroad trains leaving an infected city, town or other place, were required to be made up of unupholstered cars, which were fumigated with sulphurous acid for six hours prior to the hour of departure. [In view of the results of Koch's recent investigations into the causation of cholera, dry heat might be substituted for disinfection by chemical means in this and similar instances.] The baggage, freight and mail matter to be transported were thoroughly disinfected, and the passengers inspected by a medical officer before starting. About five miles from the infected place passengers and baggage were trans-

ferred to other cars which had never been within the limits of the infected district. A second transfer was made at some point about fifty miles distant from the first transfer station. Freight was transferred at some station about fifty miles from the point of departure, and the unloaded cars returned to the infected place.

These measures, having in view the prevention of the importation and spread of the germs of the disease, were published in detail in the first issue of the Bulletin of the National Board of Health, June 28, 1879.

There is, however, another and highly important series of measures requiring consideration, in view of the possible introduction of the disease germs at some unguarded point. These consist of—

1st. Efforts to prevent the occurrence of an epidemic at the infected point by having it, at the time of the invasion, in such sanitary condition that the disease shall not spread on account of the absence of certain unhygienic factors necessary to its epidemic development. It is not needful to specify these measures of general sanitation, nor to point out that, to be efficacious, they must be put in force a long time before the introduction of the disease; for though surface cleanliness may be speedily effected, the purification of an impure soil is a work of time. But it seems proper to urge that, as any point may become an infected one, and not those alone which are, from their commercial relations, most liable to invasion it is important that all points should be rendered, as far as practicable unsuitable for the epidemic development of the disease.

2d. Efforts to suppress an epidemic at the infected point by perfecting all arrangements to meet it in advance of the occasion, as, (*a.*) By providing a corps of officers to conduct a house-to-house visitation in the infected and threatened districts, for the purpose of discovering and treating cases of premonitory diarrhoea, of giving instruction on all matters relating to food, drink, the disposal of excreta, etc., and of superintending the disinfection of clothing and premises. (*b.*) By arranging for the establishment of camps or quarters in dry and well-drained localities for the accommodation of persons temporarily removed from badly infected houses. (*c.*) For arranging for the extemporization of small hospitals in the immediate neighborhood of the infected locality, and for the establishment of an ambulance system in connection therewith for the conveyance and reception of homeless cases, and of those from houses vacated for cleansing and fumigation as being dangerously infected.

In the discussion which followed the reading of Dr. Smart's paper, Dr. Covernton (Can.) gave a detailed account of the quarantine regulations adopted by the Canadian authorities with reference to the threatened invasion of Asiatic cholera.

Dr. Baker (Mich.) moved that all papers read be referred to a special

committee of five for consideration, and to formulate a report based thereon, embodying the methods approved by the conference for combatting cholera. The motion was carried, and the chairman appointed as such committee Drs. Baker (Mich.), Rauch (Ill.), Walcott (Mass.), Bryce (Ont.), and Herrick (La.).

The committee was instructed to report on the following day, after which the session was adjourned.

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TUESDAY, October 15.—After the reading of the minutes of the session of Monday, which were approved, the following paper was presented :

### CAN EPIDEMIC DISEASES BE EXCLUDED BY SANITARY CORDONS ?

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By C. W. CHANCELLOR M. D., *Secretary State Board of Health of Maryland.*

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I desire to bring to the attention of the conference a few facts in connection with the existence and spread of Asiatic cholera which may enable us to form a just conclusion as to the means necessary to combat the disease.

The influence which the law of quarantine is supposed to have in the protection of the public health ; the bearing of that law on some of our strongest prejudices ; and the assumption that it contains the various precautions which have been long deemed our safeguards against the introduction of epidemic diseases, from whatever part of the world the danger may be apprehended, render every suggestion that may affect it a matter at once of general interest and peculiar delicacy.

There is no subject on which such vague notions have prevailed ; none respecting which men's minds have been so completely and so generally mystified, as that relating to the system and utility of quarantine laws. On the one hand, care is to be taken that, in the attempt to relieve commerce from burthens and inconveniences which press upon it, and to afford it the greatest freedom of which it is susceptible, we do not expose the country to the most formidable risk. On the other hand, that neither ancient prejudices nor an excess of anxiety to avert possible danger, should induce the introduction or continuance of restrictions inessential to their object ; and should thus deny to trade any of those facilities, which, consistently with every prudential regard for considerations of protection and safety, it may be permitted to enjoy.

The argument against quarantine in cholera is based upon a multiplicity of testimony which seems perfectly unanswerable ; and therefore it appears to me wonderful that any doubt should remain upon



any mind which has been made acquainted with the facts in reference to the spread of the disease. It is doubtful whether in the whole history of sanitary legislation there exists an instance of such stupendous folly as that of supporting, at a great expense, a quarantine establishment, whereby commerce is subjected to innumerable inconveniences, for the sole purpose of preventing the introduction of epidemic or infectious diseases.

The quarantine theory errs in demanding the exclusion of the germ of the disease, often at the expense of neglecting all other sanitary precautions. Cholera is to be dealt with on the same general principle as all other diseases, and this is, that every sanitary defect must be sought out, and, as far as possible, remedied. The cause of cholera—what governs its distribution and its relative incidence in different places—is still as inscrutable as when the disease first appeared in Jessore in 1817; but it is well known that when this cause or combination of causes is present, it is favored by filth, overcrowding and every other condition adverse to health. *The practical work to be done is to remedy these conditions, and this cannot be accomplished by any system of quarantine.*

It has been quite well established that cholera is not contagious, and it is altogether improbable that the disease can be transmitted by persons or goods; therefore, quarantine and similar restrictive measures are utterly useless and always injurious, not only to commerce, but to communities as well, inducing a condition of the public mind which readily results in a disgraceful panic, such as has recently been witnessed in the south of France and in Italy. We have seen what has been the result of quarantine and non-intercourse measures, when carried into execution with all the strictness which it was in the power of the most absolute monarchs of Europe to enforce. In no instance have they succeeded in staying the progress of the pestilence, but have undoubtedly, in many instances, augmented the misery and suffering of the people, and the number of victims to the disease.

In an elaborate report made to the Philadelphia board of health in 1831, upon the causes and treatment of cholera, two series of facts relating to the origin and spread of the disease in Europe are given, to which reference may be here made, as well as to other important data from the same report

*First.* The best regulated restrictive measures, by sanitary cordons and rigid quarantines, were of no avail in warding off the disease from Astrachan, Moscow, St. Petersburg, Danzig, Berlin, Breslau, Vienna, Hamburgh, Paris, Sunderland, Newcastle, Cairo and Alexandria. If these measures could ever be hoped to avail, it would have been when enforced, as in Russia, Austria and Prussia, with the whole authority and power of the governments of those countries.

*Second.* It has been shown by official documents, that cholera broke out and attacked persons, citizens respectively of the above-named

cities, who had had no intercourse with persons from abroad, nor with any who had been or then were affected with the cholera. Moreover, the disease attacked, within the period of a few hours, persons in different and remote parts of these cities, who could not possibly have affected each other. The cholera appeared first in England, in 1823, in the town of Sunderland, notwithstanding guardships and quarantine; and its springing up suddenly in other towns in England and Scotland could not be traced to a foreign source. For weeks, sometimes months, before the breaking out of the disease in its epidemic and virulent variety, sporadic cases had occurred, and there was observed a great tendency to gastric and intestinal disturbance.

As a rule, the disease will appear first where the original or secondary causes are the most powerful. If the state of the atmosphere over the world, at any one time, is equally vitiated by some unknown cause, its effects will first appear in places where that state of the air is most powerfully aided by local vitiations, as in cities or marshy grounds.

Dr. Kirk, of Greenock, says: "No man who carefully examines the habitudes of cholera, without prejudice and prepossession, can come to any other conclusion but that, in all great eruptions of the disease, it is an epidemic depending upon atmospherical and malarial influence;" and Dr. Laurie's most graphic and excellent description of the disease at Gateshead, needs only to be read by any unprejudiced man to convince him that the unfortunates seized on the morning of the 26th of December, 1830, were smitten by an atmospherical epidemic and not by an imported contagion. "The inhabitants of Gateshead," says Dr. Laurie, "fell asleep on the 25th of December, with a sense of perfect security and devoid of panic, but before the sun rose on the 26th, fifty-five individuals had been seized, thirty-two of whom were not destined to see it set." In this instance a predisposition from the state of the atmosphere undoubtedly existed, and there was no evidence whatever that the disease was propagated by contagion or was of imported origin.

We have already referred to the futile attempts made to ward off the disease from certain European cities in 1823. We come now to notice the attempts in Europe to keep off the disease by restrictive measures of isolation and non-intercourse with Astrachan in 1830. The cholera first appeared one hundred versts (67 miles) from Astrachan, on board the vessel of war Baken, last from the Islè of Sara, a place exempt at the time from cholera; this vessel was retained in quarantine in Sedlitz, sixty miles from Astrachan, and not one of the sick reached this latter city. The cholera manifested itself rapidly and simultaneously in many parts of the city, without the sick having had any communication with the places above mentioned. The first person affected with the disease at Astrachan had not arrived from a suspected place, but was a resident of the city, and had never been

outside its limits. At Orenberg, quarantine restrictions were equally unsuccessful.

We learn from the official letter, signed by the physician, police officer and others that, after the most minute inquiries, the man first attacked with cholera at St. Petersburg, had no intercourse whatever with persons who had come from any other place—nor could direct personal intercourse be traced between any two of the first five cases. These occurred at a time when the city was surrounded by sanitary cordons, and a rigid system of quarantine existed, directly under the eye of the government, and with an immense array of military force.

The most careful and minute inquiries, as we learn from both German and English physicians, instituted at Moscow, proved incontestibly that the disease was not imported into the capital, but that it appeared there spontaneously. It was ascertained that the first four patients had not themselves been in any infected place, nor held communication with any person or persons coming from such a place.

The British Consul (and he is borne out in his statement by the Livonian government) tells us, that the disease appeared simultaneously in three different places at Riga. The first cases were two stone-masons, working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons had the slightest communication with the crews of barques, or other strangers. Danzig was said to have received the disease from Riga; but it was subsequently proved that the disease had appeared in Danzig three days before the arrival of the vessel from Riga, and with Poland all intercourse had ceased months before.

Breslau, the capital of Silesia, in what was considered the enjoyment of the most perfect system of quarantine, both on the frontiers of the province and on the river Oder, was suddenly alarmed by the disease appearing in one of its suburbs. The first case was a female who had never quitted the city, nor ever been engaged in the traffic of clothes. After the most minute investigation by the public authorities, not the slightest evidence was obtained of this person having communicated with any stranger, or goods suspected of being infected. In a few days after her death many persons were attacked with cholera, in parts of the city remote from each other.

In some of the cities in Germany and Hungary, besides a total suspension of intercourse between those in which the disease was present, and neighboring as well as distant places, each house in which a person happened to be attacked was immediately surrounded by a guard, and all communication between it and other houses was prevented. New cases, nevertheless, continued to occur daily, in different parts of these cities, and the precautions thus taken, seemed rather to increase the number of victims of the disease than to curtail them, on account of the neglect which their isolation necessarily involved. Berlin, despite the sanitary cordon, composed of the choice troops of

the kingdom under the eye of the sovereign himself, became a theatre for the ravages of cholera.

The inhabitants of Hamburg, looking with anxiety towards Prussia and the country eastward, and enlisting all the means in their power by sanitary cordons and quarantine, to prevent the disease from approaching from that quarter, found it suddenly appear in the midst of them, rising, as it were, out of the earth from the cellars, whose inmates were the first victims.

Similar restrictive measures imposed by the Austrian government were attended with the usual want of success, and Vienna became a seat of the disease before many places where no artificial barriers had been interposed.

The fourth annual report of Dr. Cunningham, the Imperial Sanitary Commissioner of India, bears upon this subject. In referring to the water theory of cholera, the report says: "As the very existence of the cholera germ has itself still to be established, as well as the opinion that it resides in the discharges, not only is the chain of argument imperfect, but every important link in it seems wanting. Cholera almost invariably travels, not down, but up the great drainage channels of the country." And again, says Dr. Cunningham, "the water theory errs in demanding a remedy for only one out of many defects. Cholera is to be dealt with on the same general principle as all other diseases, and this is that every sanitary defect must be sought out, and as far as possible remedied."

But the most startling statement in connection with this subject is contained in the eighteenth or last report of Dr. Cunningham, when he says, page 127, "The experience of fairs and other gatherings in this country (India), has again and again testified to the truth of the conclusion that cholera is not carried by persons from one locality to another, so as to cause persons not themselves exposed to the necessary local influences to become affected by the disease." This statement, if it is worth anything, teaches us that the only practical work to be done in the prevention of cholera is to remedy the conditions, and let the germs take care of themselves.

These several facts all concur to authorize the positive conclusion that non-intercourse between places actually ravaged by cholera, and places still exempt from the disease, however rigidly enforced, can give no certainty nor even any well-founded hope of protection for the latter. The promised benefit from such restrictive measures has not in any single instance been obtained, while the inconveniences and sufferings caused by them have become too manifest.

But though the exercise of quarantine laws cannot be relied upon to guard our shores from the approach of cholera, the powers of the several governments—municipal, State and National—may be exerted in such a manner as to disarm the disease of much of its malignity, and prevent its extensive spread among us. This may be done by

establishing at home, and without delay, an enlightened system of sanitary police; by taking effective measures to ensure the cleanliness and proper ventilation of our cities and their suburbs; by impressing upon every class the importance of temperance, and especially of abstinence from every species of unwholesome food or intoxicating drinks; by promoting, in every possible way, the comforts of the poor; by preventing, as far as practicable, their exposure to excessive fatigue, to cold and dampness, and to the noxious atmosphere of filthy, ill-ventilated and crowded dwellings, and by endeavoring to supply them with food which is at once cheap, sufficient in quantity and wholesome in quality; and, withal, by endeavoring continually, instead of exciting unnecessary alarm, to tranquilize and strengthen the public mind, and to inspire confidence in all classes of citizens.

This paper was discussed at length. Dr. Covernton (Can.) agreed with the author of the paper as to the precautions to be taken before the advent of cholera, and while he had little faith in inland quarantine after the disease had once gained a foothold on our continent, he attached the utmost importance to intelligent quarantine regulations to prevent its importation to our shores. The paper voiced the commercial and not the sanitary and preventive methods of dealing with cholera, and was in perfect accord with the well-known and disastrous policy of the Indian government in the management of that disease.

Dr. Holt (La.) urged a quarantine, not of the old shot-gun style, but intelligent provision for the detention of ships and the thorough cleansing of the hulks and disinfection of the contents before they were allowed to come into port. Ancient quarantines were brutal, unscientific, unsuccessful, and hurtful to commerce. Modern quarantines, on the other hand, which meant nothing more nor less than thorough, absolute cleanliness, were not only effective in preventing the introduction of disease, but were highly useful to commerce.

Dr. Reeves (W. Va.) regretted the views of Dr. Chancellor, if that meant no quarantine at Baltimore. Of what use would be any precautions adopted by his State if such a policy as that outlined in the paper was to govern his neighbor?

Dr. Steuart (Baltimore) assured Dr. Reeves that there was not the slightest danger of his port being thrown open.

Dr. McCormack (Ky.) thought the papers and discussions demonstrated the importance of such an organization as this. In the absence of a well-equipped National health service, our only protection against foreign invasion lies in systematic and effective work by the State Boards, and the work will only be systematic and effective in this sense where there was such hearty coöperation as frequent meetings and free interchange of opinions would give.

The committee appointed to prepare a report on the methods of

combating cholera, through its chairman, Dr. Baker (Mich.), presented the following :

**PRACTICAL WORK REQUIRED FOR THE PREVENTION OF CHOLERA IN THIS COUNTRY.**

There are three factors essential to the prevalence of cholera in this country as an epidemic : (1) The importation of the disease by means of ships, more or less directly from its only place of origin in India ; (2) local unsanitary conditions favorable to the reception and development of the disease ; (3) persons sick with the disease in some of its stages, or things infected by such sick persons, to carry it from place to place. These three factors naturally suggest the methods of combating the disease, for which there is needed practical work, international, national, inter-State, State and local. So far as relates to State and local boards of health, their organization and activities are greater than ever before ; but it must be admitted that after cholera has been introduced into a country, inland quarantines are not easily and successfully maintained, although efforts in this direction are then advisable. In view of the threatened introduction of cholera into this country during the coming year, and the immense waste of life and property values which would thence result through derangements of commerce, trade and productive industries, it is the sense of this conference that the general government should maintain such a National health service as shall, by rigid inspection at the port of embarkation, ascertain the condition, as to disease and infection, of all persons and things from infected districts, and secure the surveillance of such persons and things while on shipboard, and, when necessary, their detention at quarantine stations on this side for treatment and disinfection.

In view of the present threatening aspect of Asiatic cholera, and the constant danger from other communicable diseases occurring at foreign ports having commercial relations with the United States, we urge upon Congress to provide for the appointment and maintenance of medical officers of health, at all foreign ports where cholera, yellow fever, plague, small-pox or other epidemic contagious or infectious disease exists or threatens, such officers being either accredited consuls or attached to the consulates. The duties of these officers shall be : To give notice, by telegraph when practicable, of the existence or appearance of any of the above-named diseases to some constituted authority in this country ; to give notice of the departure of any vessel known or suspected to be infected, for any port in the United States ; and, whenever requested by the master of any vessel about to load or leave for this country, to inspect thoroughly such vessel in all her parts, and also her cargo, her crew and passengers ; to use such cleansing and disinfection as he may deem necessary, and to satisfy himself that all persons about to sail are free from dangerous commu-

nicable diseases, are not recently from infected places, and are properly protected from small-pox, giving to her commander a certificate of the inspection and of all precautionary measures taken. And it shall be the duty of the central authority in this country to promptly transmit intelligence of the existence of the above-mentioned diseases at foreign ports and places, and of the departure of dangerous vessels for the United States and Canada, to all State and local health authorities in the country which may be interested in the same. We further recommend, in case of those foreign ports which have no consular agents of this country, or no telegraphic communication with this country, and which are liable to transmit pestilence through commercial intercourse, that one or more medical officers be chosen to visit such ports as often as may be deemed necessary by the central health authority in this country, so as to give trust-worthy information of the health and sanitary condition of those places.

Inasmuch as the Dominion of Canada is equally interested with the United States in protecting itself and the United States from the importation of dangerous diseases, we suggest that Congress take such measures as will bring about concerted action with the Dominion and the British government, by which the consuls of this country or of England at foreign ports shall examine and take such action as they may deem effective, and notify the authorities of such government as has authority over any port to which any ship may sail in the United States or Canada, in order that such government may be in a position to take effective measures against the importation of these diseases. We are gratified that the authorities of the Dominion of Canada and of the Province of Ontario have taken active steps toward protecting the people of Canada, and, indirectly, those of the United States, by the adoption of judicious quarantine regulations. We feel, however, that with respect to those regulations regarding the landing of passengers from the mail steamers along the St. Lawrence, etc., further special regulations for the thorough disinfection of the baggage and effects of all passengers, cabin or steerage, who come from infected ports or places, should be carried out in a manner similar to that recommended by the National Board of Health. Believing that the importation of cholera into this country has usually followed the arrival of immigrants from infected countries, we therefore recommend that all such immigrants be prevented from landing at our ports until such time as the danger of the introduction of cholera by them shall have passed.

The inspection and quarantine service inaugurated by the National Board of Health, and set forth in the paper of Dr. Smart before this conference, but which system is now inoperative for want of an appropriation by Congress, meets with our cordial approval. To enable these protective measures to be carried out, we recommend that Congress be urged in the strongest terms to legislate on this subject at an

early date in its coming session, and to appropriate such funds as may be needful. The expenses incident to the work which has to be performed at foreign ports, and the establishment of refuge stations at points on our coast for the detention and treatment of infected vessels arriving from foreign ports, should undoubtedly be borne by the National government, and not by individual States or municipalities; for the benefits accruing therefrom are general and not restricted to localities, although some ports and cities on the coast may have a more immediate interest in the matter than others in the interior.

It is probable, however, that this national protective work may not be sufficient. It will, undoubtedly, delay and lessen the chances of invasion, but it may not suffice to prevent invasion; the poison of the disease is subtle, and may effect an entrance into the country at some unguarded point. The funds necessary for stamping out the disease in a particular locality, and for preventing its spread to other localities, might in some instances be borne by the municipality or State affected; but should the disease occur in a locality which has failed or is unable to make provision for the occurrence, its spread to other cities and States would be imminent. The want of means at the infected point would be disastrous to many others. Congress has recognized the necessity for aid to State and local boards of health under similar conditions in the case of yellow fever. In 1879 the sum of \$500,000 was appropriated and placed at the disposal of the National Board of Health; and the records show that of this sum \$160,000 was wisely and successfully employed in combating the epidemic of that year. We therefore recommend that the influence of this conference be used with the view of having appropriated by the national legislature the sum of \$500,000, to be used, or as much thereof as may be needful, in case of a cholera invasion, in stamping out the disease from the infected localities, and in preventing its spread from State to State.

The removal of local unsanitary conditions favorable to the development of cholera is the especial work of State and local boards of health. Much has been done already in some States, but much remains which should receive immediate attention. Where it can be done, State sanitary inspectors should be appointed to visit all towns and cities specially liable to the disease, to counsel with the local authorities as to the best methods of prevention. This work should be vigorously prosecuted before the disease reaches our shores. Health officers and inspectors appointed by State or provincial boards of health should, in addition to other sanitary work, see that the localities have set apart, erected or planned to be set apart or erected, structures which shall possess the sanitary requirements of an isolation hospital. But as regards all necessary work by local boards of health,



most State and Provincial Boards of Health have already printed and issued documents which give ample instruction.

The cause of cholera is contained in the discharges from persons affected by the disease or in things infected by such discharges. Should the disease reach our shores, the first case, and after this the first case which reaches any given community, should be strictly isolated; all infective material from these and from any subsequent cases should be destroyed in such manner as to stamp out the disease. Intelligent sanitary precautions beforehand and scientific disinfection and treatment in the presence of the disease, should take the place of the inevitable cruelties of a panic. In case any city or town is infected, the same principles of isolation should in general be applied to the city as to the infected individual. Intercourse with other cities and places should be under sanitary supervision, substantially as set forth in the rules and regulations of the National Board of Health, respecting the inspection of travelers, disinfection of effects, vehicles, etc.

Your committee recommends that when this conference adjourns it be to meet in Washington, D. C., the second Wednesday in December next; and that the secretary of this conference be directed to invite the attendance at that time of the quarantine officers and health officers of the principal cities in the United States and Canada, and that all delegates to that meeting be prepared to report the sanitary status of their States or localities, and what steps have been taken to improve the same and to prevent the introduction of disease.

All of which is respectfully submitted.

HENRY B. BAKER,  
JOHN H. RAUCH,  
H. P. WALCOTT,  
P. H. BRYCE,  
S. S. HERRICK.

The report was discussed at length, chiefly in a spirit of commendation, and especially as to the importance, and the best methods of securing action on the subject at an early day in the next session of Congress. After the discussion had been carried on for some time, Dr. Chancellor (Md.), said he believed in the majority ruling, and if it should appear that most of the States endorsed the recommendations of the committee, he also would vote for them.

On a formal ballot being taken all the States voted for the approval of the report save Minnesota, the representatives of that State making the point that the proper was so important that more time should be taken for its consideration.

After making arrangements for the order in which the conference and the individual boards should make their reports to the American Public Health Association on the following day, the conference ad-

journed to meet in Washington, D. C., on Wednesday, December 10th, next.

#### ENDORSEMENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The draft of recommendations for practical work to be done to prevent the entrance and spread of cholera in the United States was presented to the American Public Health Association, on behalf of the National Conference of State Boards of Health, at the Wednesday afternoon session of the Association.

Doctors Hunt, of New Jersey, and Devron, of Louisiana, favored the adoption and publication of the recommendations by the association.

Dr. Pinckney Thompson, of Kentucky, considered internal quarantine or sanitary cordons of very little use in stamping out cholera when the disease had once effected an entrance into the country.

Hon. Erastus Brooks, of New York, moved that the communication be endorsed by the association, printed, and copies be forwarded to the President of the United States and his cabinet, and to each of the Senators and Representatives in the National Congress.

Dr. Watson (N. H.) moved as an amendment that a sufficient number of copies of this report be sent to the health officers of the different cities, to the secretaries of the various State Boards of Health, and to the officers of the Dominion of Canada and of the Provincial Board of Ontario.

The motion, as amended, was adopted.

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#### C. Proceedings of an Adjourned Meeting.

Pursuant to adjournment from the St. Louis meeting the National Conference of State Boards of Health met at the Ebbitt House, Washington, D. C., on Wednesday, December 10, 1884. The meeting was called to order at 10 o'clock A. M., by the president, the Hon. Erastus Brooks, of New York, and the following delegates answered to the roll call:

Charles Wm. Covernton, Government of the Dominion of Canada; Frederick Mont Lambert, Chief Quarantine Officer, Dominion of Canada; A. B. LaRoque, Health Officer, Montreal, Can.; William Canniff, Health Officer, Toronto, Can.; C. A. Lindsley, State Board of Health, Connecticut; Smith Townsend, Health officer, District of Columbia; J. T. McFarland, Health officer, Savannah, Georgia; John H. Rauch, State Board of Health, Illinois; E. S. Elder, State Board of Health, Indiana; W. L. Breyfogle, State Board of Health, Kentucky; J. N. McCormack, State Board of Health, Kentucky, Secretary of the Conference; S. S. Herrick, State Board of Health, Louisiana; S. R. Oliphant, State Board of Health, Louisiana; Charles W. Chancellor, State Board of Health, Maryland; James A. Steuart, Health Officer, Baltimore, Md.; Henry P. Walcott, State Board of Health,

Massachusetts; S. W. Abbott, State Health Officer, Massachusetts; A. F. Holt, Surgeon General, Massachusetts; S. H. Durgin, Board of Health, Boston, Mass.; Henry B. Baker, State Board of Health, Michigan; Charles N. Hewitt, State Board of Health, Minnesota; J. C. Hearne, State Board of Health, Missouri; Joseph Spiegelhalter, Board of Health, St. Louis, Mo.; W. B. Outten, representing Missouri Pacific Railway System; J. W. Jackson, representing Missouri Pacific Railway System; J. O. Crane, Nebraska; Irving A. Watson, State Board of Health, New Hampshire; Ezra M. Hunt, State Board of Health, New Jersey; Erastus Brooks, State Board of Health, New York, Chairman of the Conference; William M. Smith, Health Officer, Port of New York; J. H. Raymond, Commissioner of Health, Brooklyn, N. Y.; A. C. Mercer, Board of Health, Syracuse, N. Y.; Thomas F. Wood, State Board of Health, North Carolina; C. W. Rowland, Health Officer, Cincinnati, O.; A. H. Iddings, Health Officer, Dayton, O.; Crosby Gray, Health Officer, Pittsburgh, Pa.; F. W. Germer, Health Officer, Erie, Pa.; J. Ford Prioleau, State Board of Health, South Carolina; H. B. Horlbeck, Health Officer, Charleston, S. C.; G. B. Thornton, State Board of Health, Tennessee; J. Berrien Lindsley, State Board of Health, Tennessee; Charles Mitchell, Board of Health, Nashville, Tenn.; William Penny, Board of Health, Galveston, Tex.; J. G. Cabell, Board of Health, Richmond, Va.; T. A. Harris, State Board of Health, West Virginia; James E. Reeves, State Board of Health, West Virginia; J. T. Reeve, State Board of Health, Wisconsin.

At the request of the chairman, the secretary read from his official call for the meeting the following paragraphs:

"At the conclusion of the report on the Prevention of Epidemic Cholera in America during the meeting of this Congress at St. Louis, Mo., on the 13th and 14th of last month, and after urging upon Congress in the strongest terms its duty to enact such legislation and to appropriate such funds early in its coming session as will prevent the importation of this disease to our shores, it was resolved, that when this conference adjourns it be to meet in Washington, D. C., the second Wednesday in December next, and that the secretary be directed to invite the attendance at that time of the quarantine officers and the health officers of the principal cities in the United States and Canada; and that all delegates to that meeting be prepared to report the sanitary status of their States or localities, and the steps taken to improve the same, and to prevent the introduction of disease.

"In accordance with that instruction, you are cordially invited to attend the meeting of the conference, which will convene at the Ebbitt House, Washington, D. C., at 10 A. M., December 10th, and you are requested to be prepared to make such a report of the sanitary conditions and regulations of the territory under your jurisdiction as is contemplated by the above request of the conference.

"The gradual extension of cholera in Europe, the serious outbreak of the disease in Paris since the adjournment of the conference, and the well-known fact that it has never prevailed in that country as an epidemic without reaching our continent, coupled with the knowledge that our national government is taking no efficient precautions to prevent its importation, give great importance to the results of this meeting, and it is hoped will secure your attendance and coöperation."

In announcing the meeting open for the transaction of business in accordance with the above, the chairman stated that the objects of the present session of the conference were—first, to hear reports from States and cities as to existing sanitary conditions; second, to consider the best measures for the prevention of cholera in the United States and Canada.

Concerning the latter he said that the record of mortality caused by the cholera, even in the past few months, was startling. Little or no preparation had been made to meet the disease in Paris or London, although it had prevailed for a whole season in the south of France, and had swept away thousands of lives which might have been saved by proper precautions. What is done in the State and in the United States in the form of preparation for the worst should be done quickly. Every citizen in his own home and place of business should become at once a practical sanitarian. In the four cholera visitations at New Orleans, between 1832 and 1855, the deaths numbered 51,300. This fearful warning after a long time proved equal to the necessity of proper sanitary organizations to meet and fight the disease if it comes again. Whatever the cause or sources of this evil, public and private duties are now made so plain that they cannot be neglected, and must be enforced.

"We regret," he said, after referring at length to the importance of preparing to meet the cholera, "to read the statement of Dr. Hamilton, the supervisor general of the marine hospital service, made far in advance of the present meeting of this conference, that 'the health boards now here in session in Washington, said all there was to say at St. Louis.' We also regret Dr. Hamilton's statement that the more recent conference of 'sanitarians in New York city, decided that they wanted no more governmental aid than is now being provided.'

"Such was not the judgment, conclusions or record of either of the two bodies in session at St. Louis in the month of October. Nor was it the judgment of the conference of sanitarians held two weeks since in the city of New York. Upon the contrary, these three bodies, composed of practical sanitarians, expressed the opinion that more and better work could be done by the National government to arrest, and if possible, prevent the appearance of a fatal calamity than had hitherto been accomplished.

"While it may be self-conclusive to a single officer of the government that his own work is complete, and that all other advice, knowledge and assistance is uncalled for or unnecessary, it is the judgment of your presiding officer, and he presumes of this conference upon the best information to be obtained, that in a crisis like the present a more enlarged, liberal and comprehensive system of health administration is necessary for the country than is at the present time provided for by Congress or by any officer or department of the government.

"In our judgment the Nation and the States, municipalities and towns, by wise health laws, government and methods of administration can and should not only shut out the spread of cholera, but largely and humanely secure the general health, comfort, and prosperity of the people. These governmental authorities are largely distinct from each other, and therefore require distinct authority, according to the recognized power of each department, to act in one spirit and within one purpose to secure the good of all.

"Precisely what the sanitarians assembled in New York asked from Congress, and from this National body through its appeals to the Federal Legislature, is set forth in the following one of a series of resolutions by them adopted :

*First.* It is the duty of the General Government to provide at all foreign ports from which emigrants may embark a thorough sanitary inspection by a competent medical officer, of persons, baggage and cargo leaving such ports.

*Second.* The coöperation of the National Government, in so far as to require its representatives at foreign ports to prevent any infected cargo from being shipped, and to inform the quarantine authorities at the port of destination, in the most speedy manner possible, of any sickness on board of vessels at the place of departure of any infectious, contagious or suspicious character, and of persons or cargo on board from cholera-infected localities.

*Third.* The coöperation of the General Government with the maritime quarantines, by requiring its representatives to furnish bills of health of all vessels bound to ports in the United States, which bill of health shall give a full statement of the conditions of the port with reference to the diseases of the character mentioned, of the crew and passengers on board, and of the measures taken to secure a good sanitary condition of the vessel while at the port of departure.

*Fourth.* The enactment of a law punishing masters of vessels who fail to bring United States consul's bills of health from ports where there is a representative of the United States, and to compel, under penalty, the complete isolation of cases of infectious or contagious diseases.

"The broad principle was also laid down that cholera could be and ought to be excluded from the United States by quarantine laws and

their proper execution. But an administration like this for practical safety requires capable persons, constant vigilance, complete material and equipments and willing obedience to wise authority. And such I understand to be the objects of legislation to be asked for by the representatives of the State health and local boards now assembled at Washington."

At the conclusion of the chairman's address, on motion of Dr. Walcott, of Mass., the following standing committees were appointed:

On Federal Legislation—Drs. Walcott, of Massachusetts, Smith, of New York, Rauch, of Illinois, Herrick, of Louisiana, Baker, of Michigan, Mr. Brooks, of New York, and Dr. McCormack, of Kentucky.

[This committee was subsequently enlarged by the addition of Drs. Hearne, of Missouri, Wood, of North Carolina, Chancellor, of Maryland, Elder, of Indiana, Thornton, of Tennessee, and Covernton, of Canada.]

On Matters pertaining to the Hygiene of States—Drs. Watson, of New Hampshire, Hunt, of New Jersey, Hewitt, of Minnesota, Thornton, of Tennessee, Hearne, of Missouri, and Covernton, of Canada.

On Municipal Hygiene:—Drs. Raymond, of Brooklyn, McFarland, of Savannah, Durgin, of Boston, Breyfogle, of Louisville, Montizambert, of Quebec, Spiegelhalter, of St. Louis, and Mr. Rowland, of Cincinnati.

The president suggested that the Committee on Federal Legislation should consider the subject of reduction of postage on all documents relative to public health issued by State authorities.

The roll was called by States for papers and propositions and the reference of the same to appropriate committees. Dr. Elder, of Indiana, presented a communication from the Board of Health of that State, in regard to the reorganization of the National Board of Health, which was referred to the Committee on Federal Legislation. Dr. McCormack, of Kentucky, offered a draft of a bill providing for the organization of a new National Board of Health and defining its powers and duties, which was referred to the same committee.

Mr. Brooks, of New York, presented the following communication from the sanitary conference, held in New York city, November 20th, 1884:

*To the National Conference of the State Board of Health:*

Upon the invitation of the Health Officer of the Port of New York, Dr. William M. Smith, the following-named physicians and health officers met in the rooms of the board of health at No. 301 Mott street, New York city, November 20, 1884:

Dr. S. Oakley Vanderpoel, ex-Health Officer of the Port of New York; Hon. Erastus Brooks, of the New York State Board of Health; Dr. Durgin, President of the board of health of Boston; Dr. R. M.

Wyckoff, of the Brooklyn board of health; Dr. Thomas F. Rochester, of the Buffalo University; Dr. Stephen Smith, State Commissioner of Lunacy, New York; Dr. C. A. Lindsley, of the Connecticut State Board of Health; Dr. J. E. Richardson, of Brooklyn; Dr. W. DeF. Day, Sanitary Superintendent, New York city; Dr. E. H. Janes, Assistant Sanitary Superintendent, New York city; Dr. Ezra M. Hunt, Secretary of the New Jersey State Board of Health; Dr. Cyrus Edson, of the New York city board of health; Dr. J. F. Conkling, of Brooklyn; Dr. E. M. Moore, President New York State Board of Health; Dr. W. H. Thayer, of Brooklyn; Dr. William M. Smith, Health Officer of the Port of New York.

Hon. Erastus Brooks presided and Mr. John C. Collins acted as secretary. Dr. William M. Smith stated the object of the meeting to be to consider—

*First.*—The measures necessary to prevent the introduction of Asiatic cholera into New York and contiguous communities; and

*Second.*—The measures necessary to prevent its extension, should it develop in our seaboard cities, or adjacent localities.

After full discussion of both subjects the opinion prevailed that measures to prevent the spread of cholera, should it develop in the seaboard cities of adjacent localities, should properly be left for consideration to State and local boards of health, and to the National Conference of State Boards of Health to assemble at Washington in December.

The following resolutions were then adopted :

*Resolved,* That a vigilant quarantine of sanitation at our maritime quarantine ought to prevent the introduction of cholera.

*Resolved,* That the following measures are necessary to secure a successful quarantine against cholera.

[These are quoted in the address of the chairman—see *ante*.]

*Resolved,* That the chairman be requested to present a copy of the foregoing resolution to the National Conference of State Boards of Health to meet in December, and also to the president, signed by the chairman and secretary.

WHEREAS, The State has been liberal in the appropriations for the erection of suitable buildings for a quarantine establishment; and whereas from their location and character they are necessarily perishable; therefore,

*Resolved,* That it is the imperative duty of the State to maintain their efficiency, and with that view an appropriation should be made yearly to put the vessels and buildings in thorough repair.

*Resolved,* That it is the opinion of this conference that a liberal support of the quarantine station in New York Harbor is essential to the protection of the public health from the invasion of cholera and other pestilential diseases.

*Resolved,* That the Legislature be requested to place in the hands

of the quarantine authorities full powers for meeting the special dangers of the invasion of cholera by such appliances as science has proved to be necessary.

*Resolved*, That copies of the foregoing resolutions be presented to the Governor and the Legislature under the authority of the State Board of Health.

*Resolved*, That as, in invasion of epidemics, the various highways of travel have so often been the media for their spread, we earnestly call attention to the need of an active sanitary administration on the part of all railroad and other transportation companies, concerning the condition of cars, stations, latrines, etc.

ERASTUS BROOKS,  
*Chairman.*

JOHN C. COLLINS,  
*Secretary.*

The communication was referred to the Committee on Federal Legislation.

Dr. W. M. Smith, health officer of the port of New York, read a paper in regard to the failure of the maritime sanitary regulations to prevent the introduction of contagious diseases into this country. Dr. Smith gave a summary of the statistics of immigration from 1819 to the present year. He stated clearly the relations of the subject of immigration to the introduction of infectious diseases, illustrating the liability of the immigrant to be the medium of such communication in consequence of his habits at his departure, during the voyage, and at his arrival. The imperfection of present regulations was shown, and the comparative value of consular bills of health as contrasted with those of local authorities.

He emphasized in strong terms the need of better trained and experienced medical officers on board transatlantic steamers, who should supervise the sanitary condition of ships, their cargoes, crews, and passengers, and all matters pertaining to the hygiene of seagoing vessels. The bad condition of affairs on ocean steamers, he said, arises from the fact that the owners are not American citizens, and, as a rule, they are indifferent. He dwelt upon the dangers of bringing infectious diseases into this country unless coercive measures are adopted. On many of the lines steamers have now isolated hospitals, but the surgeons are very frequently found to be incompetent and their diagnosis of contagious diseases and their preventive treatment are often a complete failure. The reason of this is that the pay of surgeons is small and in consequence they are principally young men who want to see the world before settling down to the practice of their profession. To correct this defect he urged that ship surgeons be appointed after an examination by a competent board, and that their salaries and tenure of office be made the subject of proper regulations.



"As legislation on this side of the Atlantic can effect no change directly in the personnel of the medical staff of a foreign mercantile marine, except as it authorizes the infliction of penalties by the health authorities at the maritime ports for such omissions of duty as endanger the life and health of passengers, other measures should be considered with a view of securing a radical change and improvement in the medical force of the transatlantic passenger steamship companies trading at our principal ports.

"A committee appointed by some sanitary organization, such as the American Public Health Association, for correspondence, and, if it shall be thought best, conference with persons or organizations of kindred character and purposes in Europe, will be a long step in the way to secure the desired result. This subject has already been discussed in England by those who are enlisted for reform. Coöperation with sanitary organizations, or their representatives in this country, will not only be acceptable to them, but will encourage and strengthen their noble endeavor."

Dr. Covernton, of Canada, heartily endorsed the paper just read. An epidemic of small-pox now prevailing in Ontario, has its origin from an infected emigrant allowed to land through the inefficiency of the ship's surgeon.

The paper was referred to the Committee on Federal Legislation.

Before adjourning for the noon recess the secretary announced an invitation from Surgeon Billings, U. S. A., to visit the Army Medical Museum, where specimens of the comma bacillus and bacillus tuberculosis, received from Dr. Koch, were on exhibition.

During the recess the members proceeded in a body to the department of State, in response to an invitation from Secretary Frelinghuysen, to whom the delegates were severally introduced by Medical Director Gihon, U. S. N. Accompanied by the secretary the members proceeded to the White House at the request of President Arthur. Secretary Frelinghuysen presented the members to the President, and the purpose of the visit to Washington was stated in a brief address by Mr. Brooks, who explained that the object of this meeting of the conference was to consider methods for preventing the importation of Asiatic cholera into and preventing its spread in this country, and that the gentlemen composing this body were practical sanitarians, representing the existing health organizations in twenty-four States of the Union, with four delegates from the dominion of Canada. As soon as they had sufficiently considered them they would present their views to Congress, asking such legislation as seemed to be demanded by the exigencies of the times, and expressed the hope that the President would favor the purposes they had in view.

Both President Arthur and Secretary Frelinghuysen responded in cordial words of welcome and interest in the objects of the conference, and promised every assistance in their power in aid of the movement.

The President said that the State and Treasury departments were just now engaged in preparing new rules regulating the importation of rags from foreign countries, so as to reduce to a minimum the danger of bringing cholera and other contagious and infectious diseases to our shores through this article of commerce, and would be glad to have all the information they could obtain on the subject. He suggested that the conference appoint a committee to advise with the secretaries of these departments in regard to this matter, which he was informed would be done.

At the close of this interview an invitation was received from the Secretary of State and from Secretary McCulloch, of the Treasury department, for a business presence and discussion as to proposed measures of legislation and the work needed from Congress and from the Executive to prevent the introduction of cholera into the United States, and the best methods of meeting the scourge if it should force its way into the country.

The Secretary of the Treasury invited the committee on Federal action to meet him at his office in the Treasury building, and the Secretary of State at his rooms in the State department. Secretary McCulloch expressed the deepest interest in the subject of imported rags in connection with quarantine laws and regulations; upon the proper disinfection of old rags when coming from infected ports or places, and upon proper officers and proper times and places for disinfection and examination.

The strong statement was made in a dispatch from Augustine Smith, of New York, to the President of the Conference, that there was no evidence, or statement by authority, that cholera had ever come through or from imported rags, nor had the scourge broken out in any paper mill of the country. The correctness of this statement being questioned by the Secretary of the Treasury, and reference being made to the superintendent of the marine department, Dr. Hamilton, in charge of the Federal quarantine work, who was present, stated that small-pox had come into the country by the importation of old rags. The judgment of all present was that imported old rags ought to be disinfected either at the place of departure, or landed in some safe place for disinfection in the United States before their distribution. Dr. Smith, health officer of the port of New York, one of the seven members of the committee, in response to questions from the Secretary of the Treasury, took the most prominent part in this discussion.

At the conclusion of this conference the Secretary placed in the hands of the committee the following paper or circular for their consideration and approval, and invited further advisement upon the subject :

MEMORANDUM PREPARED BY THE SECRETARY OF THE TREASURY CONCERNING THE IMPORTATION OF RAGS.

No old rags shall be landed in the United States except upon disinfection, as provided for in this circular.

Either of the following processes will be considered a satisfactory method of disinfection of old rags, and will entitle them to entry and to be landed in the United States upon the usual permit of the local health officer :

1. Boiling in water for two hours under a pressure of fifty pounds per square inch.

2. Boiling in water for four hours without pressure.

3. Subjection to the action of confined sulphurous acid gas for six hours, burning one and a half or two pounds of roll brimstone in each 1,000 cubic feet of space, with the rags well scattered upon racks.

Disinfection in the bale by means of perforated screws or tubs, through which sulphur dioxide or superheated steam at a temperature of not less than 350 degrees, shall be forced under a pressure of four atmospheres for a period sufficient to insure thorough disinfection.

Old rags may be landed and stored at such places as may be fixed by this department for the purpose of undergoing any of the processes of disinfection before named, and upon the completion of such process to the satisfaction of an inspector of customs and the local health officer, the rags may be delivered to the importer or consignee.

Old rags may be subjected to disinfection by either of said processes in any other country where this department may appoint an inspector to superintend the same, whose certificates of such disinfection shall be authenticated by a United States consular officer according to Department Circular No. 61, of April 22, 1884.

The Secretary of State took the deepest interest in the subject before the conference, and with his chief assistant secretary assisted the committee throughout its sessions in framing the proposed law. Section 6, giving extraordinary power to the President of the United States "in the event of any sudden emergency threatening the importation of contagious diseases into the United States from any foreign country," was framed by or recommended by the Secretary of State himself, and was subsequently adopted by the committee and the conference.

Arrangements were made for further consultation on the subject between Secretaries Frelinghuysen and McCulloch and the Committee on Federal Legislation.

AFTERNOON SESSION.—The conference was called to order at 3 P. M., the President, Mr. Brooks, in the chair.

By request of the conference, Dr. George M. Sternberg, U. S. A., chairman of the Committee on Disinfectants appointed by the Amer-

can Public Health Association at its recent meeting at St. Louis, made a statement of the work being done by that committee. The committee had been divided into two sub-committees—one to determine by biological experiments the value of certain commercial disinfectants, and the other to formulate rules for the practical application of such of these as were found to be reliable germicides.

The experimental work, in charge of Dr. Sternberg, is conducted at the Biological Laboratory of the Johns Hopkins University at Baltimore. The work at present being confined to the examination of commercial disinfectants, the first test employed is a given quantity of beef tea, a definite amount of each disinfectant being used in the performance of the test, after which it is proposed to employ well recognized disease-germs, such as the bacillus of anthrax, etc. Many of the popular disinfectants have already been tested, such as Squibb's coal tar disinfectant, with the following results:

SUBSTANCES.	Per cent. in which active.	Per cent. in which failure.
Little's Soluble Phenyl, . . . . .	2	1
Labarraque's Solution (liq. sodæ chlorin), . . . . .	7	5
Liquor zincchloride (Squibb's), . . . . .	10	7
Feuchtwagner's Disinfectant, . . . . .	10	8
Phenol sodique, . . . . .	15	10
Platt's Chlorides, . . . . .	20	15
Gowndin Disinfectant, . . . . .	25	15
Williamson's Sanitary Fluid, . . . . .	25	20
Bromo-chloralum, . . . . .	25	20
Squibb's solution of impure carbolic acid, . . . . .		50
Buchard's Disinfectant, . . . . .		50
Listerine, . . . . .		50

These results show that the well-known Labarraque's solution, when of proper strength, is one of the most valuable disinfectants in the market. The only article in the list which proved to be more efficient is Little Soluble Phenyl, but this is more expensive, and is objectionable on account of its insolubility, and for other reasons.

Dr. J. H. Raymond, of Brooklyn, made a brief statement from the other sub-committee. Sulphur, sulphate of zinc and copperas are the disinfectants in most common use in this country. The germicidal power of sulphur was well established, but the best means of using had not been determined. By the aid of Profs. Vaughan and Leeds, experiments were now being conducted as to the most efficient method of using disinfectants upon such articles as furniture and clothing, and in the disinfection of houses. He had reason to hope that this work would result in conclusions of permanent value on those important questions.

Dr. Rohé, the secretary of the committee, stated that a circular letter asking for financial aid in order to permit the prosecution of the work contemplated, had been forwarded to State and municipal boards

of health, and other sanitary organizations. Responses to this appeal had been encouraging, and four hundred and twenty-five dollars had been contributed. The committee estimated that about one thousand dollars would be needed to complete the work. Further contributions were asked for.

Dr. Reeves, of West Virginia, offered the following preamble and resolutions, which were read and referred to the Committee on Federal Legislation :

**WHEREAS**, The sanitary interests of the citizens of the United States demand that the medical service upon ships engaged in the transportation of passengers to and from our ports be conducted in an intelligent and efficient manner; and,

*Whereas*, Serious defects exist in this service from the want of proper control and properly paid and duly qualified medical officers; therefore,

*Resolved*, That in the opinion of this conference there should be established an International Committee, whose duty it shall be to supervise the medical and sanitary interests of passengers upon the high seas, and to decide upon the standard of qualifications of medical officers entrusted with the care of such interests.

*Resolved*, That the Secretary of State of the United States be respectfully requested to invite the principal maritime nations to unite with this country in the establishment of such International Committee, and, at the proper time, to appoint three members to represent the sanitary interests of the United States on said committee.

#### REPORTS UPON SANITARY CONDITIONS AND MEASURES.

The chair announced that the secretary would call the roll of States in alphabetical order, and delegates would report briefly the sanitary conditions of their respective localities, and the measures adopted therein for the prevention of the invasion and spread of Asiatic cholera. In the following résumé, only so much of the manuscript reports, subsequently furnished to the secretary, is given as pertains to these subjects.

*Connecticut*.—"Early in the year the State Board caused to be issued a circular relating to the expected invasion of cholera; and giving instructions to the local boards as to the best means of protecting the public from it, or limiting the spread of it, if it should reach us. Later a more urgent appeal has been sent to every town, pressing upon those who are responsible for the public health, the duty of having their health boards immediately organized for active work. \* \* I believe I am justified in reporting that during the present winter such effort will be made throughout the State in removing the unsanitary conditions which may now exist as will put us in a fairly good condition to meet the enemy. And if we do not succeed in wholly excluding it from our borders, our people will at least be so well in-

structed as to control it and limit its destructive power to the minimum.

\* \* \* The threatened invasion of cholera has had a salutary effect upon the public mind everywhere with us. The people are more ready than ever before to give heed to those precautions which are necessary to their safety. I believe if the dreaded pestilence comes, it will not find us altogether unprepared."—C. A. LINDSLEY, M. D., Secretary State Board of Health.

*Georgia.*—The quarantine station of this port (Savannah) is twelve miles distant in an air line from the city, with buildings and wharfage erected on an oyster reef or island. The quarantine regulations are very stringent, having been enacted with special view to the prevention of the introduction of yellow fever, and are rigidly enforced."

\* \* \* The natural advantages of Savannah are good, and "the sanitary policing of the city is excellent, the streets and lanes being kept clean at all times. \* \* \* The municipal authorities have taken no special steps with reference to the expected visitation to the United States of cholera, but will continue to demand the most rigid compliance with all ordinances promoting cleanliness of the city and surroundings; and of quarantine regulations, especially that of thorough disinfection and cleansing of vessels, cargoes, and the clothing, bedding, etc., of crews or passengers from infected or suspected ports."

—J. T. McFARLAND, M. D., Health Officer, Savannah.

*Illinois.*—"This Board has given the subject under discussion its serious attention for some time. The published proceedings of the Board show that as early as March, 1883, the probable spread of cholera was then under consideration, and during the spring and summer of that year, with such contingency in view, the condition of the Chicago river and the Illinois and Michigan canal, with reference to the Chicago water-supply, and the disposal of Chicago sewage as affecting the cities and towns along the line of the canal, were made the subjects of a report to the Governor of the State, and of communications to the mayor and health commissioner of Chicago. In response to circulars issued July 3, reports have already been received from some 420 cities, towns and villages, setting forth their sanitary conditions, detailing the recent efforts made to improve them, and furnishing copies of existing health laws and ordinances for suggestions as to their amendment. As soon as the weather will permit, a systematic sanitary survey will be begun in the southern portion and carried northward with the advancing season; so that by the first of May the sanitary condition of every dwelling in all its belongings, of all premises, outhouses, wells, cisterns, and other appurtenances may be made known, the remedying of defects be pushed, and the coöperation and authority of the State Board be exerted wherever necessary to supplement the efforts of the local authorities. Responses have also been received from all the important railway companies operating in the State, regarding their buildings, grounds, passenger cars and other

matters. Should it become necessary a sanitary supervision of railway and steamboat travel within the confines of the State and upon its boundary lines will be established and exercised by the Board; and in this, as in other matters affecting the public health, there is assurance of hearty coöperation from these important interests. Public institutions, State, county, and municipal, either have already inspected, or are now undergoing inspection, and the remedy of defects thence disclosed is being prosecuted as far as practicable. An effort will be made during the winter to secure some amendment of the Board of Health Act, and the General Assembly will be asked for the appropriation of a sufficient sum, as a contingent epidemic fund, to place Illinois in a condition to take care of itself if the general government fails to discharge its obvious duty of providing an adequate National health service."—JOHN H. RAUCH, M. D., Secretary State Board of Health.

*Indiana.*—"On the first of July last our Board issued a general order for a thorough cleaning of all cities and towns, and places near inhabited dwellings. This order was served upon every local board within the State, and was generally obeyed. The continued increase of cholera in Europe induced the Board to issue a special cholera circular on the first of August, accompanied by an imperative order to local boards to at once place their respective jurisdictions in a good sanitary condition. At the same time full and explicit directions were given for disinfection, quarantine, etc. Orders were also served at the same time upon every chief railroad official, whose lines of railroad touched our State, to place their properties in good sanitary condition and exercise the utmost precaution against their roads being either an avenue through which cholera could be introduced, or their depot grounds or cars becoming a nidus for the development or propagation of diseases. And an order was also served upon hotel keepers to place their houses in a sanitary condition and keep them so. These orders were generally obeyed promptly and cheerfully, and a thorough disinfection and cleaning was the result. Thus our State was placed in a much better hygienic condition than ever. Yet we are fully conscious that there is yet room for much improvement, and we are constantly urging through the public press and by letters and circulars the absolute necessity of thoroughly cleaning and keeping clean the cities and towns. During the past three months we have issued and distributed five thousand special cholera circulars, twelve thousand preventable disease circulars, twenty-five hundred reprints of the proceedings of the conference of this body at St. Louis, together with five hundred copies of Dr. Rauch's address. We have held six sanitary conventions; have caused a sanitary survey to be made of every prison and county asylum in the State, together with all of the State institutions for the insane, idiots, reform school for boys, etc., beside many private institutions, and are now causing a sanitary sur-

vey made of every city and town in the State, and every railroad depot and grounds. So that we feel justified in saying that Indiana is in as good a sanitary condition as any of the surrounding States. However, we appreciate the fact that much can yet be done in the line of sanitary work, and we are pushing the work. We are well aware that our State is peculiarly exposed to the danger of cholera infection if it should reach America. We have suffered severely in each of the epidemics that has prevailed in America, the disease having reached us in 1832, 1848, 1849, 1852, 1854, 1866 and 1873."—E. S. ELDER, M. D., Secretary State Board of Health.

*Kentucky.*—"On the confirmation of the first reports of the outbreak of cholera in Europe during the past summer, the State Board of Health at once began the use of every means at its command to induce local boards of health and the people themselves to prepare to resist an invasion of this disease. \* \* \* A circular of instruction and warning was sent to the health and civil authorities in every city, town and hamlet in the State; and, through the columns of the secular and religious press, which has warmly seconded every effort we have made, these circulars were infinitely multiplied and introduced into every reading family in the State. \* \* \* This was followed by systematic efforts to secure perfect organization in every town and county until no health or civil official under our jurisdiction has escaped our admonition, or can claim that his duty, and the importance and methods of discharging it, have not been laid before him in the strongest and plainest terms of which we are capable. In order to gain information for this report, and to again call attention to the subject, a second circular was issued two weeks ago"—calling for reports as to the steps taken—"looking to the removal of the unfavorable sanitary conditions. \* \* \* Conceiving it to be my duty to this conference to state the results of this labor as plainly and unreservedly as has been our custom as a board in dealing with our own people, I will say that these results have fallen far below our expectations. Exceptions must be made in the case of local boards of health in a few instances, but, as a rule, it may be said that little or nothing has been attempted at all adequate to the emergency. This is certainly true of Louisville, which I have recently inspected personally, and of other important towns about which I have been able to gather reliable information. Should cholera reach this country, sanitary inspectors will be sent out by this Board to every section to urge and assist in the work of preparation, and every other agency at our command will be employed in the same work."—J. N. McCORMACK, M. D., Secretary State Board of Health.

*Louisiana.*—"In the month of May, 1884, soon after the present organization of the State Board was effected, it was decided to invite  
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a conference with the boards of adjoining States, for the purpose of considering measures of quarantine protection against foreign pestilence. Accordingly, on June 2, representatives from the State Boards of Alabama, Mississippi, Texas, Louisiana and Tennessee, and from the local boards of Pensacola, Fla., and the Gulf counties of Mississippi, met at New Orleans and held a three days' session"—the proceedings at which have already been published in full. \* \* \* "The appearance of cholera in Europe in the spring of 1884, led to the following resolution, introduced by Dr. Salomon and adopted by the State Board of Health, July 9th. Whereas, cholera is known to exist at Toulon and Marseilles in epidemic form, therefore be it resolved, That the president of this Board instruct the quarantine officers at all the quarantine stations in the State, to detain all vessels coming from said ports, or any other ports where cholera may exist, until further orders from this Board." On the 17th of July, Dr. Joseph Holt, president of the Board, issued a proclamation based upon the foregoing resolution, and ordering that "all vessels, together with their crews, passengers and cargoes, arriving at the several quarantine stations of the State from the French ports of Toulon and Marseilles, and from any ports that may hereafter become infected with cholera, be detained for observation and disinfection, until such time as, in the opinion of this Board, it may be safe to allow them to enter the port of New Orleans. The quarantine officers at the several stations are especially charged and directed to enforce strictly the execution of this proclamation." \* \* \* "Moreover, particular care is exercised in the inspection of vessels at quarantine from all European ports, which is made only by daylight; and such vessels are kept under surveillance of the inspector of shipping while in New Orleans. Up to the present time no vessel actually or presumably infected with cholera has yet arrived, though several from French and Italian ports have been detained from a few hours to two days for inspection and observation. It is proper to add that, since the appearance of cholera in France this year, only one emigrant vessel has arrived at this port from the Mediterranean. During the latter part of November and beginning of December, the Board of Health has consulted with the city authorities and the auxiliary sanitary association, with the view of taking early steps to improve the sanitary condition of New Orleans."

\* \* \* "This consultation has been carried on privately, since it has been thought advisable not to alarm the public mind by showing grave apprehension of danger. The object is to commence the house-to-house inspection at an early day, so as to have the whole city front and the most thickly populated localities in good sanitary condition before the return of hot weather. The city authorities evince a lively interest in the matter and a willingness to do all that the financial situation will permit; but they aver that they cannot contribute more for carrying out this work until they begin to realize upon the revenues

of 1885. At present the sanitary police, on whom devolves the work of making the house-to-house inspections, and the serving and enforcing orders for the abatement of nuisances, is limited to nine men. This number will probably soon be increased to fifteen. The city authorities also promise, at the beginning of 1885, to remedy the present neglected condition of the streets, gutters, drainage canals and other places falling under the jurisdiction of the commissioner of public works, and to make an appropriation for purchase of disinfectants, and meeting whatever emergency may arise from an actual outbreak of cholera. In this last event, or should the danger become imminent, the Board of Health will issue instructions for household sanitation, having special reference to choice and preparation of food and drinks, dress, exposure to weather, removal of refuse matter, early medical relief to any derangement of the alimentary canal, and effective disinfection of suspicious discharges. It may be observed, in this connection, that rain water, stored in cisterns, is almost exclusively used in New Orleans for drinking and cooking purposes, which fact is a great safeguard against the whole class of filth diseases. There is no underground sewerage, and the old privy-vault system remains; but the law now requires these vaults not to exceed two feet in depth under the surface, to be water-tight, and to be emptied by odorless apparatus. The contents are dumped into a closed boat, which is discharged into the river below the city limits.—S. R. OLIPHANT, M. D. member; S. S. HERRICK, M. D., secretary State Board of Health.

*Maryland.*—"It is gratifying to report that an increased interest in sanitary matters has been awakened among the people of Maryland. Until lately they entertained a very inadequate conception of the laws of health; now there is an obvious tendency to a deeper and more enthusiastic interest in everything that pertains to the protection of the public health. The immunity of our State from epidemic or pestilential diseases, has however had the effect to reduce the appropriations for the State Board of Health to almost *nil*. Unfortunately, the better we do our work the less our services are appreciated. In preventing disease, boards of health destroy the food upon which they exist, and are then looked upon, by the average legislator, as useless and expensive bodies. Within the last year the aid of the State Board of Health has been invoked in various communities of the State in suppressing nuisances and in investigating the causes of prevailing diseases, and its action has in every instance been productive of good results. One case is particularly interesting and worthy of mention." This was an outbreak of typhoid fever in Elkton, Md., attributed to a polluted milk-supply.—C. W. CHANCELLOR, M. D., secretary State Board of Health.

*Baltimore.*—This city is in an "excellent sanitary condition and

quite prepared to keep out, if possible, the dreaded cholera-Asiatica, and to cope with it should it elude, in spite of our care, the vigilance of the health officer at our quarantine station. The station has recently been removed to a position seven miles distant from the city, and is now thoroughly equipped with every modern appliance. Our sanitary laws are being strictly enforced, and every possible source of disease removed." \* \* \* "The privy-well system, which like so many of our sister cities still exists in Baltimore, will in the near future I am confident be done away with, and a proper system of separate sewerage be adopted. The few remaining pump wells must also go, as Baltimore is supplied now with a superabundance of pure and wholesome water."—JAMES A. STEUART, M. D., Commissioner of Health.

*Massachusetts.*—"The State is represented at this conference by Dr. H. P. Walcott, chairman of the Health Committee of the State Board of Health, Lunacy and Charity, and Dr. S. W. Abbott, Health Officer of the Board; also by Dr. H. S. Durgin and Dr. A. F. Holt, representing the boards of health of Boston and of Cambridge. We are aware of the important position which Massachusetts holds, with reference to the introduction of contagious diseases from abroad. Of the several cities on the sea-board, Boston only holds an important rank as an immigrant port. This port is efficiently guarded by a well-regulated system of quarantine. The health-officer has visited a portion of the cities of the State with reference to investigation as to their present sanitary condition, and will continue his investigation throughout the cities and principal towns of the State for the same purpose. Everything will be done that is within the power of the State Board to do, to aid in the work of placing the State in the best possible condition to ward off pestilence, and also to combat it, should it once appear within the borders of the State." \* \* \* "Circulars were issued last summer and sent to local boards of health, physicians and others generally throughout the State, and also for publication in the daily and weekly newspapers of Massachusetts."—S. W. ABBOTT, M. D., State Health Officer.

*Boston.*—"The efforts of the [city] board have been more successful and attended with less delay on the part of landlords and tenants than usual during the last few months, on account of the cholera epidemic abroad and the fear of its visiting this country. We hope to take still more advantage of this state of public apprehension to rid our city of its thousands of unnecessary privy-vaults and cess-pools, extend our sewers, fill up the low water-covered spaces, place all private courts and alleyways in the charge of the city, and to make many other sanitary improvements which in ordinary times could not be done. Our death rate this year from all causes will be 22+ per 1,000, the percentage from zymotic diseases 23+, the percentage of deaths under

five years of age 37+, and the percentage of death from diarrhoeal diseases to total mortality 8.8."—S. H. DURGIN, M. D., Chairman of Boston Board of Health.

Cambridge.—"Soon after the cholera appeared in France last summer, and the danger of its coming here was being discussed by sanitarians, the board ordered a careful house-to-house inspection." This has been completed and many defects and unsanitary conditions have been remedied. "Should cholera appear in this country in the coming summer, this work of inspection will be again taken up and prosecuted in the most intelligent and thorough manner."—A. F. HOLT, M. D., Health Officer.

*Michigan.*—"The fact that the Michigan Board of Health has for some time been trying to educate local boards and the people as to what they may well do for the prevention and restriction of typhoid fever, by cleanliness of towns, and by protection of the water-supply from all sources, and that it has recently enlarged its work in this direction, has done something to prepare the way for the needed instruction with regard to cholera. Taking advantage of the popular interest in the subject, the Michigan Board distributed last summer to local boards of health and others a large edition (20,000 copies) of a document calling attention to the real sources of danger from cholera, and to proper means for preventing and restricting it; and this distribution was supplemented by the preparation of a special circular on the subject which was issued by the commissioner of railroads to all railroad officials, agents, and employes in the State. At least one city in the State has reprinted and distributed to its own people our general cholera document, as a means of educating the people to the duty of the hour." \* \* \* "I hope I have not overdrawn my statement of the preparation in Michigan for the coming of cholera, and of the efficiency of the health service of the State. There is yet much ignorance of what should be done, and of what has been done to prevent sickness. There is much apathy among the people, inefficiency and indiscretion on the part of officers; but there has been improvement in the direction in which all public-health work must take to be lasting and complete, namely, in the education and instruction of the people; and it is believed that in most intelligent communities in Michigan there is an educated sentiment with regard to dangerous communicable diseases, which sentiment is capable on demand of doing much toward controlling cholera should it appear. The increased and increasing facilities of communication between local boards and the State Board improve the situation. The success already attained encourages us to look to the further training of local boards, and the more general education of the people for the accomplishment of one great end in view, namely, the ridding the State of dangerous communicable diseases. Except in certain cities and vil-

lages where special charter provisions may conflict with the general law in Michigan, local boards of health audit their own expenses, including the salaries of the health officers; and yet in an emergency requiring prompt and unusual expenditures they are likely to be crippled for want of the 'sinews of service,' because of there being no money in the treasuries upon which their orders must be drawn. In some localities there might be danger that, because the burden was a local one, an unfortunate economical policy might prevail; and while great epidemics of cholera do not usually occur where there is not also a large population to bear the expense of controlling them, yet the correct principle would seem to be that dangers which threaten many should not be left for the few to battle with unaided. When, in 1879, Congress appropriated \$500,000 as a contingent epidemic fund, to be used at the discretion of the President, if necessary to prevent the introduction or spread of contagious diseases, I believe it established a precedent which might well be followed by State Legislatures. The expenses attending the stamping out of a local outbreak of an epidemic disease which threatens the State or the Nation may well be provided for by the State or Nation; and if such provision has not been made by the State or National Legislatures, the people will know where to charge the blame in case unaided local authorities shall be found incapable of successfully battling with such an outbreak. We do not make cholera or small-pox in Michigan; we have not yet learned how. And if we could be protected against the introduction of dangerous communicable diseases from other countries and other States, or if we were allowed to protect ourselves by such a tax on suspected travelers as would pay the expenses of an adequate inspection service, we would ask little or nothing of the general government. But situated as we are on the great highways of immigration to the whole northwest, and having a port (Port Huron) second only to New York in number of immigrants received, we justly feel that the power which claims the exclusive right to tax the immigrant should bear the expense of the needed inspection, which would be not for the benefit of Michigan alone or chiefly, but for the benefit of a large portion of our country."—HENRY B. BAKER, M. D., Secretary State Board of Health.

*Minnesota.*—"The State Board of Health of Minnesota has direct communication with twelve hundred (1,200) local authorities in the State, who compose the local boards of health, or who appoint such boards. In the event of the occurrence of epidemic disease in the State, this Board has certain powers defined in the statutes of the State, which express the duty and intention of the Board, should occasion demand the exercise of the authority so imposed. This Board has called a conference of State with local boards of health at the Capitol in January, 1885, at which time it is proposed to consider what

further legislation, local as well as State, is necessary for the more efficient organization of local boards of health, and the performance of local sanitary work. At the same time, a popular sanitary council will be held in the evenings for the consideration of sanitary questions, water supply, the disposal of garbage, excreta, etc. Impending and possible epidemics will receive due consideration. As respects the contingency of epidemics, the Governor and this Board have asked of the Legislature an epidemic fund, similar to one voted two years ago, to be disbursed by the Governor on requisition of this Board. We have further asked that this Board be made the guardian, with local boards, of the water supply of the State, and with them have control of offensive and dangerous trades, which legislation will probably be had, with an increase in the appropriation for the Board." \* \* \* "From this brief statement may be inferred the preparation made by Minnesota for the prevention and control of epidemic diseases, including Asiatic cholera."—C. N. HEWITT, M. D., Secretary State Board of Health.

*Missouri.*—"Numerous county boards of health and medical societies have sprung up since the organization of our State Board. In the early spring we prepared a circular giving full information as to the establishment and management of these boards, which met with general favor throughout the entire State. We get a great deal of valuable information and support from these organizations at this time." \* \* \* "On account of not having a sufficiently large appropriation, we have been somewhat hampered, and have worked under great disadvantages, but with the present prospect of cholera making its appearance in this country, we are confident that our Legislature will give all the money that is necessary to fully carry out our line of action, and thus give greater security to the public health against contagious and epidemic diseases."—J. C. HEARNE, M. D., Secretary State Board of Health.

*St. Louis.*—The St. Louis board of health has not been idle in preparing for the threatened visit of Asiatic cholera; at the same time we trust that this Conference will succeed in convincing Congress of the necessity of a National authority to guard our sea coast by a strict maritime quarantine. We consider it the duty of the National government to protect the country against the invasion of epidemics, and to see that, if the barriers established at the sea coast should prove inefficient to keep an epidemic from our shores, the measures taken by State authorities should be uniform and not interfere with the interstate commerce. In order to prepare the city for the advent of cholera, if it should come, we propose to inaugurate a house-to-house inspection as soon as the money necessary to carry it out is provided by the city government. This inspection is intended to include the close examination of houses, cellars, yards and alleys, the condition of

the plumbing, the water closets, sewer connections, etc. An ordinance has now been introduced providing for a board of plumbing examiners and the appointment of three inspectors of plumbing who shall be practical plumbers. The city is very well sewered and our sewer system is as perfect as any in the country." \* \* \* "Our water works furnish excellent water." \* \* \* "We have, however, a good many wells in the city which may become a source of danger during an epidemic. An ordinance is now before the municipal assembly, which will give the board of health the power to close any and all wells which are subject to or suspected of contamination with sewage. Heretofore the water of a well had to be analyzed before the board could condemn or close the well. We have also introduced an ordinance which requires all burials of persons, who died of contagious or infectious disease, to be private and to take place within eighteen hours after death. Physicians are required to report all cases of contagious or infectious diseases to the health commissioner at once." \* \* \* "In case of an epidemic our board of health has extraordinary powers to suppress and confine the disease, and we intend to make free use of them if cholera should appear in our city."—JOSEPH SPIEGELHALTER, M. D., St. Louis Board of Health.

*New Hampshire.*—"During the past season we, like many other State Boards, issued a circular setting forth the liability to cholera in this country, even in our own State, and have urged upon persons and local boards of health the importance of sanitary work. The disease once invaded our State, and the result was several deaths in the city of Manchester, so we feel that although among the granite hills and fertile valleys of northern New Hampshire, we are not beyond its dangers. The subject of maritime quarantine, about which, in addition to Dr. Smith's excellent and able paper, much has been said at this meeting, is one of interest to our State, for we have within our borders the port of Portsmouth with its navy yard at which twenty-six vessels landed during the past year from foreign ports. While this may be regarded as a diminutive affair, it presents some liabilities which at least give us no small interest in maritime quarantine. Interstate quarantine is also a matter which comes within our consideration from the fact that Maine upon our east and Vermont upon our west borders have no State health departments. [A State Board of Health has since been organized in Maine.] Many emigrants during the winter months land at the port of Portland and are shipped directly through the northern portion of our State into Canada and the West by the Grand Trunk Railway, hence a portion of our State is exposed, in a small degree perhaps, to the dangers that are brought to any community by emigrants from infected localities abroad."—IRVING A. WATSON, M. D., Secretary State Board of Health.

*New Jersey.*—The Secretary of the State Board of Health, Dr. Ezra M. Hunt, made a brief verbal report of the preparations made and the precautions which would be enforced in the event that Asiatic cholera should make its appearance on this continent.

*New York.*—"The cities of New York and Brooklyn contain nearly two million of the five millions of people in the State. All the two hundred and twenty-four villages and nearly all of the one thousand towns have local boards of health. Constant and earnest efforts are made by the State Board, through correspondence, reports, and in the work of experts and inspectors, chiefly local, to perform necessary local work. The best public opinion is largely in sympathy with this kind of work and the result of after four years' education and experience is almost a revolution in the progress made in popular knowledge and official practice. The State appropriates but \$20,000 yearly for the State Board, but the great cities make more satisfactory provision for their own more important examinations. The State Board is always ready with advice, instruction and, as far as possible, with material aid and assistance." \* \* \* "Much of the work in New York comes from executive reference and direction and an important part of it also from State legislation when seeking information as to drainage, sewerage and diseases. In regard to the possible and expected coming of the scourge of cholera, the State at large, the Board hope, is as well prepared as possible to meet the disaster, so far as relates to warning, information and constant vigilance. The consequences of neglect are fully known. The duty of all connected with corporations, factories, workshops, families, homes and persons is too plain to need report or discussion. The members of the New York State Board will endeavor to perform their duty and trust to the people, stimulated and directed by a wise Providence, to perform their obligations as citizens of the State."—Hon. ERASTUS BROOKS, State Board of Health.

*Brooklyn.*—Dr. J. H. Raymond, Health Commissioner of Brooklyn, presented an elaborate report upon the sanitary conditions of that city—its water supply, pounds, privy vaults, disposal of night soil, sewerage system, Italian quarters, lodging houses, laundries, food supply, etc.: and upon the preparations and provisions to meet an invasion of cholera—medical inspection, hospitals, quarantine, etc. In closing his report, Dr. Raymond submitted "to the conference for its consideration and ratification, if approved, the following propositions: *First.*—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity. *Second.*—That all privy vaults should be abolished wherever water closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to



prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals. *Third.*—That all stagnant ponds should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth or other material free from garbage or other filth. *Fourth.*—That great care should be exercised to keep, at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected. *Fifth.*—That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out-of-the-way places, to see that no filth of any kind has been deposited there. *Sixth.*—That the food supply be vigorously watched to exclude from the market all unwholesome meat; all milk adulterated or from diseased animals; and all unripe fruits and vegetables: and that cow-stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations. *Seventh.*—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance. *Eighth.*—That such material should never be used in the filling of lots or disposed of by throwing the same in streets or on vacant property where it may decompose and exhale offensive and deleterious gases. *Ninth.*—That in view of the practical results reported by that eminent sanitarian, Edwin Chadwick, Esq., C. B., the authorities of all public institutions, and individuals as well, have their attention drawn to the great importance of the personal cleanliness of those committed to their charge, as one of the most efficient means of warding off an attack of cholera, and of reducing its force when once it has appeared. *Tenth.*—That all authorities of States, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that in the opinion of this conference such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked such a community

will be better able to cope with the disease and to reduce its ravages to a minimum.”—J. H. RAYMOND, M. D., Health Commissioner.

Syracuse.—“In dealing with cholera questions in Syracuse, we have acted, and shall continue to act, for the present at all events, in accordance with accepting as a fact the ‘greatest probability’ as to genesis of cholera. In doing so we feel we shall act with more decision and accomplish much more telling practical work. We shall then continue to act upon the belief that the genesis of cholera in a new place depends upon the fact that bacilli, perhaps the comma-shaped bacilli of Koch—specimens of which were kindly shown us yesterday by Surgeon John J. Billings—or perhaps some other of the schyzomycetes, have been carried from the intestine of an individual ill with cholera by some one or more of countless means and finally through the mouth to the intestines of the newly afflicted person. Therefore we shall try to prevent the germs entering our city, \* \* \* we shall try to furnish them as small an amount of soil as possible in which they may grow and multiply, \* \* \* and we shall try to kill the germs if they find their way into Syracuse by the use of such germicides as we expect Dr. Sternberg, so soon as he is able to do so, to suggest as the result of his laboratory work in the Johns Hopkins biological department; and at the same time we shall give proper attention and care to the sufferers in whom the germs may be resident.”—A. CLIFFORD MERCER, M. D., Health Officer.

North Carolina.—“As far as the machinery of our Board is concerned it has many good points. It provides a superintendent of health for each county, and this officer in our sparsely settled counties can easily fulfil the functions of sanitary supervisor and physician. The law provides that he shall be a physician legally authorized to practice. Our endeavor is to get from the next Legislature such amendments as will give the superintendent an adequate salary for work in each county. If this can be done, and an appropriation is given to the State Board, as I believe it will, we shall have some showing for an organization against cholera. We do not feel much alarm about cholera and epidemics in general in North Carolina. Over a hundred years ago Cornwallis brought small-pox into the State, and we were somewhat exempt until Sherman brought it in in 1865. For fifty years we have had no cholera except three spasmodic cases, which occurred in Wilmington in 1868. But as all evils bring good to somebody, I trust that the threatening of cholera invasion may stimulate the next Legislature to aid the whole work we have undertaken, and supply us with a contingent epidemic fund. \* \* \* —THOMAS F. WOOD, M. D., Secretary State Board of Health.

Ohio.—The Health Officer of Cincinnati reported upon the general sanitary condition of that city—its water supply, sewerage, privy vaults, meat and dairy inspection, etc. “The sanitary force of twenty

men is divided, so that a sufficient number attends promptly to all cases of contagious disease; the rest are attending to the inspection of houses, yards, cellars and premises, and the abatement of nuisances. For this purpose, the city is divided into districts, one inspector being assigned to each, and it is made the duty of each to inspect houses, measure depth of vault contents, etc., and to report the result in writing each morning. The cleaning of our streets and removal of garbage are not satisfactory, largely because the Board of Public Works is not provided with sufficient funds to do the work properly. This would be our greatest danger in case of the advent of cholera; but should such emergency arise our Board of Health would appeal to the public for the means with which the cleaning of streets and alleys, and the prompt removal of garbage would be secured. I do not doubt that our citizens would promptly and cheerfully respond to such an appeal. Mr. Chairman, permit me to say in conclusion that my disabilities, as a layman, are greatly mitigated by the fact that you are also numbered with me."—C. W. ROWLAND, Health Officer.

Dayton.—Supplementing a detailed sanitary history of the city, the health officer added: "Dayton being an inland city will of course not be expected to perform any special or direct work in the way of national quarantine. If cholera can develop in the United States only by transportation from foreign countries, our complete protection will depend upon the efficiency of the coast quarantine. It is, therefore, highly important that a more perfect understanding of international quarantine be obtained, and that a more rigid enforcement of the law be employed. With a critical application of a thorough system of international quarantine, a uniformity of interstate action and sanitary vigilance upon the part of the municipal authorities, we may reasonably anticipate a very modified form of the disease, if we do not escape it entirely. Such local or immediate quarantine and protection as may be necessary to the modification or prevention of cholera in the city of Dayton will be promptly employed and rigidly enforced. Realizing the danger to which our vault system exposes us, we will endeavor to procure such change and improvement in the system as the circumstances will permit. In case cholera should reach Dayton we will not be wholly unprepared for it. The citizens have been and will continue to be, from time to time, warned of the probability of the introduction of cholera. Circulars relating to diet, care and attention to the system in health as well as the symptoms and treatment of the primary stage of the disease, will be placed in the hands of every one. The location for hospitals, together with plans for their general operation and management, has been fully considered. Taking all things into consideration, Dayton may be considered as being fairly prepared for the anticipated epidemic.—A. H. IDDINGS, M. D., Health officer.

*Pennsylvania.*—Since the date of the meeting a State Board of Health has been established, but at the conference only the cities of Pittsburgh, and Erie were represented. Crosby Gray, health officer, furnished a paper upon the "Present and Prospective Sanitary Condition of Pittsburgh;" and Dr. Germer, of Erie, since appointed president of the newly created State Board of Health, made the following remarks: "Our city was visited long before others by the Asiatic cholera in June, 1832. A woman died on board of a ship, which was taken to quarantine in 'Misery Bay,' where several others died. The woman came from Quebec and washed the clothing of her husband, who had died during the voyage from the old country. The citizens got pretty well scared and opened a shotgun quarantine and permitted no one to land. After that the cholera appeared in other lake cities. In 1854 another case was reported. In 1873 a whole family got sick with symptoms of Asiatic cholera, and created quite an excitement. By a close examination, I found that they had eaten pork full of trichinæ spiralis, and, after giving their pork and sausage to the scavenger, the disease made no more trouble, but the people got a little suspicious about certain kinds of pork." \* \* \* "We had two small-pox epidemics in 1872 and 1882, breaking out in our rag-shops, and I ordered a wholesale vaccination. There used to be an old fashioned Pennsylvania pest house in our city, which fitted exactly Dante's inscription over the portals of hell: '*Lasciate ogni speranza, voi che entrate*!'—'You'd better make your will, and give up all hopes of recovery, before you go in there!' I disinfected that horrible institution one evening, with ten gallons of petroleum and a match. We have now a new hospital for contagious diseases and two other good hospitals; besides these we have the great marine hospital building, which cost over \$100,000, and was never used for anything. In case of emergency our skating rinks would also make pretty good cholera hospitals. The better houses are all provided with modern sanitary improvements. The few old privy vaults I disinfect generally with a wheelbarrow full of gas lime, fresh from the gas factory. This will disenfect the contents of the vault, and at the same time spoil every well within a radius of 100 feet, and give the people a fair warning not to drink such water. This is a very cheap disinfectant for such purposes; a great many of the other disinfectants don't amount to more than a prayer-meeting against the grasshoppers in Kansas. If we want to disinfect, it is no use to do it in a homeopathic way, for at Naples, in Italy, and at Colima, in Mexico, hundreds are dying with cholera and yellow fever in spite of the near volcanoes which are filling the air with sulphur and smoke. Sanitary science is still a baby, but growing rapidly. We have a great many rich communities, where the people think they have reached the highest point of civilization if they have a hose cart and a fire engine, and where the sanitary officer is regarded as an unnecessary appendage to the

local government. The people in general do not realize to what extent public health depends upon the man who has to fight the milk diluter, the poisoned candymaker, the counterfeiter of butter, and the importer of rags and other articles which destroy or shorten human life. I hope the time is coming when every intelligent community will not only appoint a health officer, but furnish him also with a good microscope and chemical apparatus for his researches. It is no use to fill such places with retired politicians. Our consuls in foreign countries ought to have decent salaries, to enable them to watch the ships leaving for America, and to see that no contagious diseases are brought to our country. Young, well educated physicians would answer for that purpose. We want a national board of health composed of wide awake men, and there will be work enough to keep them busy."—ED. WM. GERMER, M. D., Health Officer.

*South Carolina.*—"Our State Board of Health \* \* \* has paid special attention to the quarantine regulations of the State, supervised all the stations, repaired most of them, and has purchased a site on Buzzard's Island and erected buildings thereon. Recently it has given much attention to the cholera question, has published circulars which were sent to each of the sub-boards and scattered broadcast in the State, by which they endeavored to impress upon these boards and the public that an epidemic might be prevented altogether or greatly mitigated by proper attention to cleanliness in person, premises, water supply—cleanliness in everything. The sanitary condition of the State is good so far as the cities and towns are concerned, but the condition of the interior is not so good. The sub-boards have not as yet become acquainted with the benefits which their reports afford, and consequently these reports are not as numerous and regular as could be wished. A system of vital statistics has been provided. All the charitable and penal institutions have been visited. Sanitary inspectors' reports have been made—in a word we have earnestly and faithfully endeavored to discharge all the obligations imposed on us by our health laws. We are now, and, until all danger is past will continue to be, actively engaged in warding off the threatened epidemic of cholera, and in preparing to combat it, should it appear within the limits of our State."—J. FORD PRIOLEAU, M. D., State Board of Health.

Charleston.—"The present sanitary condition of Charleston is excellent and the mortality for the month of November among the whites exceptionally low, being under 20 per 1,000. It is not so, however, with the colored race; from their improvidence they suffer very much more, and no provision being made for the care of the helpless of their race, either old or young or sick, many succumb to disease who would not otherwise suffer." \* \* \* "Charleston is exceptionally well situated for the disposal of deleterious matter,

being on a tongue washed by salt water on three-fourths of its area. There has been ordered, and is now being carried out, a careful house-to-house sanitary survey of the city, including cesspools, privies, drains and surface deposits. A daily written report is received from our sanitary inspectors, and all collections of filth are removed and places disinfected." \* \* \* "The scavenging system is most efficient. The carts being owned by the city, are used in the early morning for the removal of garbage, and in the afternoon for the city hauling work. Every day the garbage is up before midday. Very stringent orders have been given and are enforced at quarantine, the administration of which is under the Board of Health of Charleston. All vessels arriving from France, Italy, Spain, and ports of the Mediterranean are thoroughly cleansed and disinfected with bichloride of mercury, and then fumigated with sulphur fumes. All foreign vessels whatever are very carefully examined."—H B. HORLBECK, M. D., Health Officer.

*Tennessee.*—Tennessee is perhaps as ready to meet an invasion of Asiatic cholera as any of the United States. As far back as 1833 an intimate acquaintance with this scourge of the nineteenth century was formed. Lovely country towns like Shelbyville were decimated, while its capital city, Nashville, ranked with Lexington, Kentucky, most noted among all the cities afflicted. In 1873 twenty counties, extending from the south-western frontier bordering on the State of Mississippi to the north-eastern line coterminous with Virginia, were laid waste. The Tennessee public knows full well the brief but emphatic logic of history. Never has Asiatic cholera prevailed as an epidemic in Western Europe without crossing over to America. Never has it reached America without desolating Tennessee. The great epidemic of 1873 deeply impressed the entire Tennessee community. The authorities were called upon to establish boards of health, looking to the prevention or at least the mitigation of epidemic. The city governments of Nashville and Memphis soon responded to this demand, and in March, 1877, the General Assembly created the State Board of Health with limited powers and no funds. In 1878 happened one of the most remarkable chapters in all the weird history of epidemics. Memphis, once the city of refuge for the stricken people of New Orleans, became the scene of woe and suffering, not surpassed by the vivid pictures of Thucydides, Boccaccio or DeFoe. Tennessee, by nature a paradise, became known to all the world as the theatre of yellow fever in its worst form, received the sympathy of christian prayer in the hamlets and villages, towns and cities of the Great Republic, and such overflowing relief in money as never yet has been surpassed for promptitude and whole-heartedness. This terrible lesson was not without its compensation. In March, 1879, the General Assembly enlarged the powers of the State Board of Health

and endowed it with means sufficient to make these powers effective. Likewise the National Legislature awoke from its long lethargy and created a Board of Health, March 30, 1879, in harmony with the powers and usages of the local or State boards then rapidly multiplying. The ink was hardly dry upon these respective statutes before the second great Memphis epidemic broke out and demonstrated the wisdom and practical utility of such machinery for applying the resources of sanitary science to the wants of populous communities. The National Board and the State Board coöperated with perfect harmony. Terror was averted. The tender mercies of christian charity, and the magnificent resources of medical skill were extended without stint to the afflicted, and the epidemic did not spread. As a result of this deeply significant chapter in recent epidemiology the people of Tennessee have great confidence in boards of health, State and National. They look to these boards as official exponents of medical and general science in relation to the prevention of disease. They are ready to follow the advice and directions of those organizations promptly and thoroughly, knowing full well that in common with all branches of theoretical and practical science, the Godlike art of healing has made astonishing advances since the epoch of 1881. The Tennessee State Board of Health, appreciating the heavy responsibility resting upon it, because of the popular confidence it enjoys, immediately upon the news from France early in July last, commenced its work of preparation. Ten thousand copies of carefully prepared circulars were sent out so as to reach each one of the magistrates and other civil functionaries in the State. Every physician, pharmacist, dentist and clergyman was also supplied. Said circulars have been widely copied by the leading newspapers and thus the entire community has been awakened. Systematic correspondence has been opened with mayors of over one hundred towns in the State, and with the chairmen of all the county courts, looking to the speedy organization of local boards. Encouraging responses are rapidly coming in pledging immediate action. Hence it is safe to believe that in case Asiatic cholera should once more visit the University State of the South, that it will be met with the calm self-reliance becoming a people blessed with christian hope and the splendid resources of modern science."—J. BERRIEN LINDSLEY, M. D., Secretary State Board of Health.

Nashville.—"The reports of the representatives of the various cities have thus far been very gratifying. The sanitary condition of all of them is represented as being nearly perfect. I wish that I could make a like favorable report of the city that I have the honor to represent; but the facts will not warrant me in doing so, and if I comprehend the object of this conference, we want nothing but plain naked facts, without embellishment or evasion." \* \* \* "The sources of greatest danger with which we have to contend, exclusive of foreign invasion,

are first, An impure water supply—second, Imperfect and insufficient sewage, and in consequence thereof, privy-vaults, cess-pools, etc. Our water supply is from the Cumberland river, which stream flows through the city and would furnish comparatively pure water, if drawn some distance above the city.” \* \* \* “As to the second source of danger, I would say, that all of the sewers in the city, except those built during the last three years, are worse than none, being simply trenches cut in the ground and covered with slabs, earth or rough masonry. With this relation of facts, it is not difficult to understand why Nashville has always been a sufferer whenever cholera has invaded this continent. The board of health is doing everything possible to encourage and facilitate the construction of approved sewers, and whenever they are built, property owners are compelled to clean, fill up and discontinue the use of their vaults, and connect their premises with the sewer by a water-closet arrangement. In localities where sewers cannot probably be built for sometime, all surface and faulty privies are condemned and owners compelled to construct vaults not less than three feet deep, three feet long and one and a half feet wide, (inside measurement when complete), walled up with stone or brick laid in hydraulic cement, so as to hold water and securely retain its contents.”—CHARLES MITCHELL, M. D., Health Officer.

*Memphis.*—Dr. G. B. Thornton, member of the State Board of Health and president of the local board, spoke briefly upon the general sanitary improvements in Memphis, with which he presumed most sanitarians had already made themselves familiar. The water supply and the reclamation of the Gayoso bayou and Wolf river, were not yet satisfactorily adjusted. The “Taxing District” would rely, for the exclusion of cholera, upon the same agencies which had been resorted to with reference to yellow fever during the past four years—namely, as good a sanitary condition internally as could be obtained and a rigid system of inspection during the danger season and of quarantine upon the first suspicious symptoms.

*Texas.*—In the absence of the State Health Officer, an interesting description of Galveston was furnished by Dr. Penny, who closed his remarks by saying that “an opinion prevails here that cholera cannot become epidemic; this opinion is based upon the fact that when it prevailed in the interior of the State that it did not spread in Galveston; but the conditions are entirely different here now to what they were when cholera last visited this State. There is nothing being done in the way of preparatory work in local sanitation, although an enormous amount of work is needed. Should cholera make a lodgment on this continent, money will then be furnished to do the work that should be done at this time.”—WILLIAM PENNY, M. D., Health Officer, Galveston.



*Virginia.*—Dr. J. G. Cabell, Health Officer of Richmond, said that the annual appropriation of \$10,000 made by the city authorities was not sufficient by half. The city at present is in a filthy condition. He said the death rate among the colored population was so large as to excite the pity and commiseration of the whole community. He attributed it not to constitutional peculiarity, but to poverty.

*West Virginia.*—Dr. J. E. Reeves, of the State Board, said that, in spite of the statement of the health officer of Wheeling, recently made in the public press, to the contrary, the sanitary condition of Wheeling was now deplorable. The refuse of 12,000 people was emptied in and about the head of the water supply of the city. He had endeavored to cultivate a cholera fright, and he believed that the effect would be good, and that the source of the water supply would be moved three miles up the river beyond the point of contamination. Last year the total expenditure for sanitary purposes in Wheeling was the magnificent sum of \$327. He had recommended that women be appointed as inspectors in each ward, and he believed this would have good results.

*Wisconsin.*—“With regard to the cholera, this Board, in August last, issued a ‘Cholera Circular,’ packages of which were sent to the health boards \* \* \* in every part of the State. This circular stated the prevalent fear that cholera would reach this country, and urged general measures of sanitation, both private and public, as measures of prevention. The same circular was sent to the newspapers of the State, and by them multiplied many thousands of times, so that it reached a very large proportion of the reading people of the State. It was also sent to railway officials, with a special circular addressed to them urging cleanliness about the stations, cars, etc., both in the interest of the public from a sanitary standpoint, and in their own interests from a pecuniary standpoint. All of these circulars were regarded and stated to be preliminary to additional ones, to be issued should cholera appear in this country. Among the more noticeable items of sanitary work recently done in Wisconsin, I may mention that in one of its cities—the city of Green Bay, which contains a population of 9,000 to 10,000—the future construction of privy vaults has been prohibited by ordinance. This city has no public water supply, and the facilities for the drainage of a large part of it are bad. The sanitary authorities, recognizing the fact that this season its wells were in great danger of pollution, and not feeling strongly enough entrenched to order the entire abolition of privy vaults, have, nevertheless, positively prohibited the construction of any new ones on private premises, and have filled up those connected with public buildings, substituting for them the dry-earth system. Wisconsin has recently suffered from small-pox, which was brought to it in a way that suggests the possibility that cholera or any other contagious

disease may first develop itself in an inland State in the persons of emigrants, in whom the presence of infection may not be recognized at the seaboard. In this case an emigrant family had landed from a German steamer, had passed the port of entry without detention or suspected danger; yet within two days after arrival the father and, following him in rapid succession, other members of the family came down with small-pox. The lesson taught by such cases is the need of constant vigilance on the part of health officers at all places where emigrants to this country first land, lest not only small-pox but cholera come to us of the interior in infected persons, clothing or baggage."—J. T. REEVE, M. D., Secretary State Board of Health.

*District of Columbia.*—"Washington is an inland city, and must be guarded against exotic diseases by inspecting railway trains, as the water entrance is protected by the quarantine station near Cape Charles. We place more reliance, however, on the strict enforcement of our local sanitary regulations than on quarantine. The germs of disease may escape the observation of the most vigilant quarantine officer, but if our homes and cities are in the condition they should be, they will find no soil for their growth and development. Washington is in an excellent sanitary condition now, and with the completion of our systems of water supply and sewerage, and the reclamation of the Potomac flats, it will not only be the most beautiful but the healthiest city on the continent."—SMITH TOWNSHEND, M. D., Health Officer.

*Canada.*—After reciting the powers of the Federal and Provincial governments with reference to quarantine, the following were stated to be the "Precautions taken by the Ontario Board of Health since the danger of invasion of cholera became imminent. In addition to the ordinary sanitary precautions of public and personal cleanliness pressed upon all local sanitary authorities, the following have been supplemented: 1. Frequent articles in leading public journals regarding the urgency of efficient Dominion quarantine and correspondence with the Minister of Health at Ottawa on the subject. 2. Circulars to all cities, towns and villages requesting immediate information on local sanitary conditions. 3. A careful consideration of the dangers from cholera at the August quarterly meeting and the adoption of resolutions, twelve in number. 4. The communication of these to the Dominion Government and to the Provincial Governments of Manitoba, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and British Columbia. 5. Attendance at the St. Louis Conference, and the repeated urging of the report adopted by it on the attention of the Dominion Government. With reference to the amount of local sanitation accomplished by the Board, it may be stated that local boards have reported the nature and extent of their organization from almost every city, town and village in the Province and

from nearly half of the townships, many of which are very sparsely settled. Nearly 75 per cent. of the total population is under sanitary control. These boards being required by the act to make annual reports to the Provincial Board, have already sent in over one hundred reports, many of them voluminous and displaying surprising progress in local sanitation since the passage of the new Health Act."

6. \* \* \* A fourth outbreak of small-pox in the Province of Ontario since January, 1884, each one clearly traceable to immigrants from Europe, in whom the period of incubation of the disease had not expired at the time of quarantine inspection at port of arrival, but developed in transit from sea-board to the place chosen for settlement, was cited as "demonstrating the absolute necessity for suitable houses of detention for all passengers who, when a case had occurred on board, might possibly have been exposed to the contagion, and thus, for the safety of the passengers in the cars, they would be traveling in *en route* for their ultimate destination, as also for the inhabitants of the location they have fixed on, should be for a period of fourteen days under observation in properly furnished buildings at the quarantine station of port of arrival." \* \* \* —CHARLES WM. COVERNTON, M. D., Chairman Provincial Board of Health of Ontario.

Quarantine.—Having presented to the conference copies of the laws and regulations relating to quarantine in force in Canada, including the special regulations issued last summer in view of the threatened visitation of cholera, the chief quarantine officer made the following remarks: "As I am called on to speak I may say, as from myself alone, that if possible our quarantine laws be not yet quite perfect. If we have not, perhaps, as yet arrived at securing the maximum protection of the public with the minimum interference with trade and commerce, I trust that in our endeavors to do our hands may be strengthened by the results and conclusions of this conference. Our system of maritime quarantine is a national one, all matters relating to it being under the control of the Federal Government, so that a certainty of concerted action at all our ports is secured. It seems to me most desirable that there also be, if possible, mutual agreement between the Canadian government and the authorities which control quarantine matters at the different ports of this great Union. Varying local conditions and requirements may render any universal quarantine code impossible, but on some most important points, all might act in concord. For instance, with regard to cholera, the number of days requisite for quarantine of observation after the occurrence of the last case amongst passengers or on a vessel, and also the most efficient germicide for the disinfection of the baggage, cargo, etc., are matters in which similar action might well obtain at every port along the seaboard, from your most southern to our most northern one. This is a subject in which every State and every Province, aye, and every individual on this great continent is interested.

If cholera once make its entry any where on this continent it will be hard indeed to stop its inland progress and its diffusion far and wide. The maritime quarantine stations of both countries may be compared to one great chain, and I need hardly remind you of the old adage that the strength of a chain is that only of its weakest link. But, in hope at least, we may go farther yet, and in addition to concerted action on this side, strive for something more. And I would wish to be allowed to add my tribute of testimony as to the desirability and expediency of international quarantine. Important such help to us would always have been. Even in the days of sailing vessels as passenger carriers it would have tended to prevent, or much lessen, the arrival of infectious sickness at our ports. But with those vessels, after their long voyages, we at least knew the worst when they arrived. Now, with the introduction of steamships, which make the passage from Europe in less than a week, there is always the possibility of passengers contracting disease just before sailing, and arriving here before the period of incubation has elapsed; and so being able to pass undetected the most careful and vigorous quarantine inspection. This might happen but rarely, but the very fact of there being such a possibility, shows how important the careful supervision of passengers before they sail would be, where this is possible. And at least in addition to the inspection on embarking, some endeavor should be made to secure from the authorities of the districts whence the passengers come, information of the conditions as to any existing infectious disease in those districts. Such facts when so ascertained could be cabled, by code words, in warning to the quarantine officers of the port to which the vessel is consigned. Vessels are making shorter and shorter voyages now, and it seems of ever-increasing importance to strive for this much at least, even if no more can yet be obtained, in the way of international notification of the existence of infectious disease.—F. MONTIZAMBERT, M. D., Chief Quarantine Officer of the Dominion of Canada.

Montreal.—Dr. La Rocque furnished a very full account of the sanitary features of Montreal, its sewerage, water supply, mortality and the preventive measures to be adopted against contagious diseases, especially in the event of a visit from cholera. "The board of health has decided to take measures to prevent the spread of contagious diseases. I have prepared a circular to be addressed to the medical men of the city and surrounding municipalities, to the superintendents of schools, workshops and manufactories and heads of other large establishments, asking them to report any case of contagious disease that might come under their notice. A circular will be sent to families wherein such cases exist, giving them full instruction for the isolation of patients, the use of disinfectants, and anything else calculated to prevent the spread of the disease. The surrounding municipalities, having no drainage, no system of scavenging, in fact having done

nothing towards sanitary improvements, are more or less in a fit state to favor contagious diseases, especially cholera. They will be invited to join the health authorities of this city to adopt the necessary preventive measures against this disease.—A. B. LA ROCQUE, M. D., Medical Health Officer.

Toronto.—Closing a general sanitary description of the city, Dr. William Canniff, the health officer, added—"While the present sanitary condition of Toronto is not all I would wish it to be, I am able to say that very great improvements have been effected, and that this advancement will in the future be more marked. I can affirm that the city I represent will give due heed to any recommendations this conference may make in relation to municipal hygiene. The fact that I am present here to-day is evidence of the interest which is felt by my city in the subject to discuss which we have met, and I can safely say that in the event of cholera reaching America, Toronto will be found ready and willing to take any step and to make any expenditure necessary to prevent and combat the disease."

In connection with the foregoing reports—some of which were presented during the session of Thursday—a large number of circulars, pamphlets and other publications of the various boards, State and local, were presented, as well as copies of laws, ordinances, rules and regulations. Dr. Baker, of Michigan, at the conclusion of his report, offered the following, which was referred to the Committee on State Action:

*Resolved*, That a prudent regard for the probable danger of the introduction of cholera at localities where the local authorities are unable to battle with it successfully, suggests the propriety of an appropriation, by each State Legislature, of an epidemic contingent fund to be placed at the disposal of the Governor of the State, to be used under the direction of the State Board of Health, in case of necessity, for preventing the introduction or spread of cholera.

The following passage from Dr. Covernton's manuscript is also of interest: "Before leaving Washington the delegates from Canada had the honor of an interview with the British Ambassador and at his audience took occasion to represent to his Excellency the great importance of the two governments of the United States and Canada being early advised by cablegram of the time of sailing of vessels from British ports that had previously come from European ports where cholera was prevailing, or of cargoes that had reasonable suspicion attaching to them, in order that great vigilance might be exercised on their arrival at the various quarantine stations on this side of the Atlantic, and for the accomplishment of these much needed precautions requested the coöperation of his Excellency with the government of the Dominion. This was readily acceded to by the Ambassador, and by a letter since received from the Embassy we learn that his Excellency has made the requested representations to the Home Govern-

ment. Since our return to Toronto we have had an interview with the Premier of the Dominion, the Right Honorable Sir John Macdonald, and solicited from his government not only unity of action with the United States Government in quarantine regulations at the sea ports, but also the appointment of Dominion medical health officers to inspect immigrants on their passage from the seaboard by rail through Canada either to the Western States or to the British north-west provinces. These officers to be appointed at Windsor, Sarnia and other lake ports and at such intervening distances from places of debarkation as may be judged necessary. In conclusion I would mention that since the first of July of last year, there have been established in the Province of Ontario four hundred local boards of health, two-thirds of all the municipalities being thus represented. Of the total of 447 townships there are 184 boards. Of these twenty-five have appointed medical health officers and nineteen of them have appointed sanitary inspectors, while seventeen of them have appointed both medical officers and sanitary inspectors. Of the two hundred and three cities, towns and villages in Ontario, one hundred and eighty, or more than six-sevenths, have local boards of health. Of this number one hundred and fifty-five have either a medical health officer or a sanitary inspector, while sixty-three of them have medical health officers, ninety-two have sanitary inspectors and forty-four boards have both medical health officers and sanitary inspectors.

"From this statement it may be fairly assumed that under the controlling operation of the Provincial Board, and the special knowledge of the requirements of each locality possessed by these local health boards so numerous established, the work of diminishing the spread of cholera and other infectious diseases by timely sanitary precautions will be greatly facilitated, and the Province generally placed in a requisite state of preparedness."

THURSDAY, DECEMBER 11.

The conference convened at 10 A. M., the chairman presiding, and delegates in attendance as before. The secretary read the preliminary report of Dr. J. H. Carson, inspector of the Kentucky State Board of Health, detailing the results of the investigation into the causes of the epidemic recently prevalent in that State. He discredited the theory of mineral poisoned water, and said that the disease was epidemic dysentery, caused by malarial poison, conveyed into the system by drinking the water of stagnant pools in an unusually dry season.

The total number of deaths in the State did not exceed 225.

The secretary read the telegram previously referred to, from Mr. Augustine Smith, a large importer of rags in New York, who stated that there was no case on record of cholera from rags, or of its breaking out in paper factories. Mr. Chas. E. O'Hara, secretary of the Seymour Paper Company of Connecticut, stated that they had been

successful in disinfecting imported rags from Egypt. They employed about two hundred hands, women and children, to sort the rags, and he only knew of two cases of small-pox or other contagious diseases among them in thirty years.

Dr. Arbeely, a native Syrian physician, from Damascus, detailed his experience with cholera at Beyrout and Damascus, and attributed much of the fatality to intemperate habits.

#### REPORTS OF COMMITTEES.

The committee on the action necessary on the part of the States, in order to prepare for the possible advent of cholera, as well as to guard the great interests of public health in general, reported as follows :

The laws under which State Boards of Health and the municipalities act in the several States, are so diverse that it is impossible to formulate any method of uniform action except in a few particulars. It is conceded that the most thorough and scrupulous enforcement of all the details of cleanliness as to all persons and all surroundings is the basis of the preparations to be made by States, and by individuals. Coequal in importance with this is the provision of methods by which to keep a disease from being brought into any State. This necessarily divides itself into that which relates to maritime commerce, and to commerce between one State and another.

As at present our dependence for the former protection is chiefly that furnished by the State authorities, it can only be claimed that each State should be made fully aware of what protection is afforded by the ports through which such commerce and travel pass on approach to their own borders, and should be careful to add such additional details of examination as they may deem necessary.

In reference to interstate communication, it is essential that officers of State and municipal boards in adjacent States should fully notify each other if any case of cholera occurs in its own domain, and give such other information as may be precautionary. It is essential that each local board should in advance determine with precision what it will do with any first cases that occur, and so provide as to isolation, hospitals, refuge stations, furnishing medicine, etc., as that valuable time shall not be lost and that the cholera gain no foothold.

In our judgment the time has come when the State Boards of Health of those States that have such organization, and the chief municipal health boards of those States having no State Boards, should be recognized in some national form, as having authority to inculcate such sanitary measures—National, international, maritime, and interstate—as are necessary, and to be able to secure the same through those departments of the general government under which they should naturally fall.

*Resolved*, That in order to secure efficient local boards in States, and the coöperation of the various States, State Boards of Health

should be promptly organized in all the States not yet having such boards.

*Resolved*, That in addition to the usual appropriations needed for the continuous work of State boards, that State, municipal and local boards should have contingent appropriation for the exigencies of cholera epidemics.

Ezra M. Hunt, M. D., chairman ; I. A. Watson, M. D. ; J. C. Hearne, M. D. ; C. N. Hewitt, M. D. ; G. B. Thornton, M. D., committee.

Adopted.

The committee on Municipal Action, to which had been referred the propositions submitted by Dr. Raymond, of Brooklyn, reported them back, with amendments, and the following eleven propositions were unanimously adopted by the conference :

*First*. That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages should be of undoubted purity.

*Second*. That all privy-vaults should be abolished wherever water-closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

*Third*. That all stagnant ponds, when practicable, should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth, or other material free from garbage or other filth.

*Fourth*. That great care should be exercised to keep at all times clear and free from obstruction all sewers into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected. In this connection special attention is directed to the necessity for the thorough ventilation of all soil and waste-pipes, and to the dangers connected with untrapped and unflushed soil-waste and over-flowpipes. ;

*Fifth*. That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required ; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

*Sixth*. That the food supply be vigorously watched to exclude from the market all unwholesome meat ; all milk adulterated or from dis-



eased animals; and all unripe fruits and vegetables; and that cow stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

*Seventh.* That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place, where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

*Eighth.* That such material should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property where it may decompose and exhale offensive deleterious gases.

*Ninth.* That the attention of the authorities of all institutions, both public and private, and of individuals as well, be drawn to the great importance of maintaining a habit of personal cleanliness in the persons under their charge, as being one of the most efficient means of warding off an attack of cholera, or if it has once appeared of greatly reducing its virulence and fatality.

*Tenth.* Should the cholera appear in any place in this country, the health authorities of the place should have immediate notice of the first cases in order that prompt action may be taken for complete isolation and disinfection.

*Eleventh.* That all authorities of States, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that, in the opinion of this conference, such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that, if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked, such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

J. H. Raymond, chairman; F. Montizambert, W. L. Breyfogle, S. H. Durgin, C. W. Rowland, J. T. McFarland, Joseph Spiegelhalter, committee.

The chair then announced that the committee on Federal Legislation had engagements with Secretaries McCulloch and Frelinghuysen at 2 and 2:30 P. M., respectively, for consultation in regard to the desired legislation, and suggested that the conference take a recess until 4 P. M., which was done.

**THURSDAY AFTERNOON.**—The conference was called to order at 4 o'clock P. M. Dr. J. T. McFarland, of Savannah, presented the following: *Resolved*, That this conference recommend and urge upon the Federal Government the passage of an act making vaccination and revaccination compulsory, in the discretion of State and local boards of health and quarantine officers.

Referred to the committee on Federal Legislation.

Dr. Walcott, of Massachusetts, chairman of the committee on Federal Legislation, presented an abstract of a bill which the committee was preparing, giving its essential features. It was not in form for presentation to the conference or to Congress, and the committee requested further time for its consideration. At the conclusion of the report, Dr. Chancellor offered the following resolution: *Resolved*, That so much of the report of the committee on Federal Legislation as refers to the matter of reorganizing the National Board of Health be recommitted, and that the committee be authorized to enlarge its membership to the extent of not less than five more members, so that every section of the country be represented in that body; and that power be given said committee, when so constituted, to prepare such a plan of reorganization as in their judgment may best meet the sanitary requirements of the country, and to present the same to Congress with a memorial for its immediate adoption.

After discussion by Drs. Rauch, Walcott, Reeves and Chancellor, the resolution was adopted, and Drs. C. W. Chancellor, of Maryland, E. S. Elder, of Indiana, Thomas F. Wood, of North Carolina, J. C. Hearne, of Missouri, and G. B. Thornton, of Tennessee, were added to the committee.

The conference then adjourned, to meet in Washington during the annual session of the American Public Health Association, in December, 1885.

#### APPENDIX.

The bill providing for a new National Board of Health, as perfected by the committee on Federal Legislation, and presented to the Congressional committee on Public Health, is as follows:

A bill to amend an act entitled "An act to prevent the introduction of contagious and infectious diseases into the United States and to establish a National Board of Health."

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That an act entitled "An act to prevent the introduction of contagious and infectious diseases into the United States and to establish a National Board of Health," approved March 3d, 1879, be so amended as to provide that there shall be established a National Board of Health, to consist of one member from each State Board of Health now established, or which may be hereafter established in the United States, to be appointed by the President and confirmed by the Senate, whose compensation, when actually engaged in the performance of duty under this act, shall be ten dollars per diem each, and reasonable expenses. This board shall meet in Washington within ninety days after the passage of this act, and shall meet in Washington annually, and in case of emergency upon the call of its chairman and secretary, or upon the extraordinary call of the President of the United States, as hereinafter provided.

The officers of this board shall be a chairman and secretary. The secretary shall be the executive officer of and ex-officio a member of the board, and shall devote his entire time to the duties of the office, and may be removed for cause, at any regular meeting of the board, two-thirds of the full board voting therefor, and shall receive such salary as may be determined by the board. The chairman with six other members, representing the various geographical divisions of the country, shall constitute the executive committee of the board, to be elected at the first meeting of the board, and at each annual meeting thereafter, and said committee shall, and is hereby authorized to exercise such powers as may from time to time be conferred upon it by the board.

SECTION 2. The duties of this board shall be, and it is hereby authorized and given power to make or cause to be made, such investigations at any place within the United States, or at any foreign port or place, and to collect information upon all matters relating to the public health, and to frame such rules and regulations as may be necessary for the government of the quarantine service of the United States; and all the power and authority now provided by law, or which may be provided by law, for the control and protection of the public health of the United States, shall be and are hereby vested in said board, except as to the special authority vested in the President of the United States under the provisions of this act. The rules and regulations of this board shall severally be executed, under the direction of this board, through such departments of the government, or other officers, as the law may prescribe or the President may designate.

This board shall coöperate with, and so far as it lawfully may, shall aid State and local boards of health in the enforcement of the rules and regulations of such boards, to prevent the introduction of contagious and infectious diseases from foreign countries into the United States, and into one State from another.

SECTION 3. It shall be the duty of this board to make such rules and regulations as are necessary to be observed by vessels at ports of departure, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers and crew, and to prepare from time to time for the consular officers of the United States, and for the medical officers serving under this act at any foreign port, and otherwise make publicly known such rules and regulations, which, when approved by the President and issued by the department of State, and posted in the office of the consul or other representatives of the United States at such foreign ports for at least ten days, shall be enforced by the consular officers and agents of the United States.

SECTION 4. It shall be unlawful for any vessel from any foreign port or place to enter any port in the United States, except in accordance

with the rules and regulations made in pursuance of this act of the rules and regulations made under State or municipal authority, and any such vessel which shall attempt to enter any port of the United States in violation thereof, shall be liable to process in the proper district court of the United States, and upon conviction, shall forfeit to the United States a sum to be awarded in the discretion of the court, not exceeding \$1,000, which shall be a lien upon such vessel to be recovered upon proceeding in the proper district court of the United States, in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws, and in all such cases the United States attorney for such district shall appear on behalf of the United States; and all such vessels shall obtain from the consular or authorized medical officer at the port of departure, a certificate in duplicate, setting forth the sanitary history of said vessel, and that it has in all respects complied with the rules and regulations of this board, made in pursuance of this act for the government of such vessels, and before granting such certificate such consular or medical officer is required to be satisfied that the statements therein made are true; and upon the request of this board, the President of the United States is hereby authorized to appoint proper medical officers, to serve in the offices of the consuls at any such foreign ports, to make the inspections and give the certificates herein required.

SECTION 5. Such vessels shall observe all rules and regulations made by this board in pursuance of this act, in regard to the inspection, disinfection and isolation of the same, upon its arrival at any port in the United States, and for the treatment of persons and cargo on board, so as to prevent the introduction of contagious diseases into the United States; and it shall be unlawful for any vessel to enter such port, to land its passengers or discharge its cargo, except upon a certificate from the health officer of such port, that such rules and regulations have in all respects been complied with.

SECTION 6. In the event of any sudden emergency, threatening the importation of contagious or infectious disease into the United States from any foreign country, the President of the United States is hereby authorized and required, in his discretion, to adopt, and make known forthwith by public proclamation, such measures as may meet the emergency, either by suspending the introduction into the United States, by land or sea, of any specified merchandise calculated to be a vehicle for the communication of contagion, or by prohibiting the entry into the ports of the United States of vessels coming from infected countries or having contagious or infectious disease on board. And in case the President shall at any time exercise the authority hereby conferred upon him, he shall, at or before the time of issuing such proclamation as aforesaid, convene the National Board of Health, to meet at Washington in special session within ten days from the date of such notice of convention. and the said board shall thereupon

advise such measures as it may deem sufficient to meet the emergency; and upon the taking effect of such measures, with the approval of the President of the United States as herein provided, the President's proclamation aforesaid shall cease to have effect. It shall be the duty of this board at all times to give prompt attention to any question in sanitary science which may be submitted to it by the President.

SECTION 7. It shall be the duty of the Department of State to obtain from the consular officers at foreign ports or places all available information in regard to the sanitary condition of such ports and places, and to transmit the same to this board; and it shall be the duty of this board to obtain from the State and municipal health authorities throughout the United States, and from all other available sources, weekly reports of the sanitary conditions of ports and places within the United States, and reports and other matters relating to climatic and other conditions affecting the public health; and it shall prepare, publish and transmit to State and other authorities, and other proper persons, weekly abstracts of such reports, consular reports, and other useful information relating to the public health; and it shall make to the President, for transmission to Congress, an annual report of its transactions, with such recommendations as it may deem important to the public health; and the necessary printing of the board shall be done at the Government Printing Office, upon the requisition of the secretary of such board, in the same manner and subject to the same provisions as other public printing for the several departments of the government.

SECTION 8. The President of the United States is authorized, when requested by this board, and when the same can be done without prejudice to the public service, to detail officers from the several departments of the government, for temporary duty, to act under the direction of this board in carrying out the provisions of this act, and such officers shall receive no additional compensation, except for actual and necessary expenses incurred in the performance of such duties.

SECTION 9. To meet the expenses incurred in carrying out the provisions of this act, the sum of five hundred thousand dollars, or so much thereof as may be necessary, is hereby appropriated, to be disbursed under the direction of the board; and the board shall have authority to appoint such disbursing agents as it deems necessary, who shall give bond, as in other cases, for the faithful performance of their duties.

SECTION 10. All acts and parts of acts in conflict with any of the provisions of this act shall be, and are hereby, repealed.

The foregoing bill was introduced into the lower house of Congress, but, owing to various causes, did not become a law.

**D. Report of Delegate to Meetings of the American Public Health Association and the Second Annual Conference of State Boards of Health, held at Washington, December, 1885.**

By ED. WM. GERMER, M. D.

*To the State Board of Health :*

In accordance with the instructions of the Board, the undersigned went as a delegate to the meetings of the American Public Health Association and the conference of the State Boards of Health held at Washington, December 8th, 9th, 10th and 11th, 1885, at Willard's hotel. Over one hundred and fifty members from all parts of the United States were present, all belonging to the American Public Health Association, with Dr. James E. Reeves as president, and D. Loury A. Watson, as secretary. In regard to the work done, it was the most important meeting of the association. The report on disinfectants presented in book form and the distribution of the Lomb prizes for the best essays on sanitary matters, which ought to be read in every American home and school and to be distributed free by every State government, formed the crowning point of the thirteenth annual meeting.

Amongst the many interesting papers read, "the debit and credit account of the Plymouth epidemic, by our secretary Dr. Benjamin Lee, in which he showed the origin of that typhoid fever epidemic, commanded general attention and conclusively proved the necessity for sanitary investigation. Dr. J. H. Bank's able report on maritime quarantine, and Dr. J. Holt's paper on the sanitary protection of New Orleans, given in a beautiful language and with all the force of an orator, elicited rounds of applause. The meeting lasted four days and the condensed report would fill a good-sized book. The conference of State Boards of Health, with Hon. Erastus Brooks, as president, and Dr. J. N. McCormack, as secretary, assembled in parlor No. 10, at Willard's hotel, December 8, 1885. All of the delegates being practical sanitarians, with fixed opinions in everything pertaining to public health matters, the meeting was a very spirited one. The question was early presented whether municipal health officers, or members of city boards have a voice in the deliberations, and a committee was appointed to define the representation of the conference and the future conduct in relation with the American Public Health Association. The creation of an American health bureau, in place of the National Board of Health, was advocated by Dr. J. Holt, of New Orleans. Dr. R. Walsh of Washington, read a paper on the vaccine virus culture. Dr. Bryce of Toronto, recommended a system of coöperation in regard to interstate notification of contagious diseases. Others advocated weekly issues of death reports. The matter of disinfecting small-pox houses was discussed. Dr. Benjamin Lee thought all foreign rags im-

ported ought to be disinfected in a thorough manner, and the undersigned was of the opinion that the nations, who had almost nothing to export except unclean rags, ought to wash them first, as there is plenty of water for such purpose all over the world. Dr. Cochran, of Alabama, claimed that the meeting of the State boards interfered with the American Public Health Association, and it was agreed to meet a day before the American Public Health Association. Finally Dr. Conn's resolution was adopted. That it is expedient :

1. To adopt a uniform system of statistics of deaths and diseases.
2. To investigate epidemic diseases.
3. To maintain a government office in order to get early information of dangerous diseases in foreign countries and to send the news by telegraph and otherwise to all boards of health.
4. To ensure by means of such organized coöperation of the general and State governments an efficient public health service.

The next or fourteenth annual meeting will be held at Toronto, Ontario, from October 5, to October 8, 1886, and promises good results. There is only lake Erie—some thirty miles of pure water between our State and Canada; the sanitarians of the Dominion have regularly attended our national sanitary meetings and we may well reciprocate the compliment and keep up the friendly relations.

Respectfully submitted.

E. W. GERMER.

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#### A. The Debit and Credit Account of the Plymouth Epidemic.

By BENJAMIN LEE, A. M., M. D., Ph. D., *Secretary of the State Board of Health of Pennsylvania.*

Nearly in the geographical center of Philadelphia lies a region which is unhappily typical of many other regions in that fair but filthy city, and which is thus described by Dr. Pemberton Dudley, a member of the State Board of Health, who, at my suggestion, made a careful inspection of the premises :

The house numbered " 800 " on East Girard avenue, is at the corner of Otis street, in the Eighteenth ward. Girard avenue at this point runs from south-west to south-east, Otis street crossing it at right angles. The location of the house is properly described as on the east corner of the intersection. The premises are occupied by Mr. Thomas R. Jones as a cigar store and dwelling, and appear to be well kept and cleanly, so far at least as the internal arrangements are concerned.

Inquiry revealed the information that late in September, 1883, Mr. Reuben Reed, who worked at his trade (blacksmith) at a shop on Richmond street and boarded with Mr. Jones, was attacked with typhoid fever. Dr. A. H. Hulshizer, a well known physician residing at 1419 Otis street, was called, and recommended his immediate re-

moval to the Episcopal hospital. This was done, the record book showing the date to be September 28th. He was discharged convalescent, October 13th.

"In May or June, 1884," says Mrs. Thomas R. Jones, "Wm. P. Williams, aged twenty-three, a conductor on the Union line of street cars and a boarder in Jones' house, was attacked with typhoid fever, was ill at the hospital for six or eight weeks, and then returned safe and sound" to his boarding house. Dr. Hulshizer recommended him to the Episcopal hospital, but the hospital superintendent finds no record of the case upon the books of the institution. Soon after Mr. Williams' return from the hospital, namely, July 16, 1884, Mr. Meshak Davis, aged twenty-one, a huckster and boarder at 800 East Girard avenue, was admitted to the Episcopal hospital with incipient typhoid fever. He also was discharged, recovered, August 19, 1884. These three cases embraced a period of about eleven months. The long space of time covered by them made it seem extremely improbable that they had originated from milk or other food contaminated by any single previous case of the disease, and I found no evidence to warrant such a theory. Neither did it appear likely that in the latter cases the infection had been transmitted from the earlier ones, since all of the first three patients were removed to the hospital at the outset of the disease. I therefore endeavored to learn whether any more constant cause existed to account for the succession of cases.

The lot upon which the house stands has dimensions of about thirty feet on Otis street by forty feet on Girard avenue. The main building is a three story brick structure, of eighteen feet front on Otis street and extending the entire depth of the lot on the Girard avenue side, leaving a side yard 12x40 feet. Directly across this space a one story frame kitchen has been erected, leaving in front of it a yard 12x16 feet opening upon Otis street, and back of it another space 12x15 feet. This rear space, however, has been further encroached upon by the erection of a two-story frame structure, which leaves only a narrow space 15x3 feet. At the rear end of this "yard" stands a yard privy, three feet square, which still further reduces the open space to 3x12 feet. The lower story of the frame building communicated with the kitchen, and is used as a dining room. Its windows open into the narrow yard, close to the privy vault. The opposite side of the yard is closed in by the two-story walls of the adjoining house, while its rear end is also guarded by a wall of similar height, belonging to the house numbered 802 Girard avenue. The privy itself is built of boards, is surmounted by a "ventilator" (which on examination was found to be a sham), and is poised over a shallow vault which also serves for the use of the house adjoining.

We thus see that the cesspool is located in and occupies one-fifth of a space 15x3 feet in dimensions; that this space is enclosed on both



sides and one end by two-story buildings, and at the remaining end by a one-story building, and is thus effectually protected from lateral air currents. The foul emanations fill up the entire space, and too often find an escape into the kitchen and dining room with which it directly communicates. If the whole yard were one large cesspool, with dining room windows and kitchen door opening into it, it might be somewhat more offensive, but could scarcely be more dangerous. The cesspool was "cleaned," or emptied, in the summer of 1884. At the time of my inspection it was almost full again. There is no sewer connection with the room (third story front) in which the four victims slept. The only connection between the house and the sewer is through a pipe leading from the kitchen sink through the cellar to a sewer on Otis street. This sewer comes up Otis street to a point somewhat below the house in question. The cellar of the Jones house and those of the three houses eastward on Otis street are affected with offensive odors at times, and the tenants frequently complain about them. The entire neighborhood is riddled with cesspools, the majority of which are in an unsanitary state most of the time. The houses on Ash street, a street running parallel to Otis and a few rods north-east of it, are in even a worse condition than those in Otis street, and evidently from the same cause, namely, defective drainage due to a badly arranged sewer. I learned that in the house on the opposite side of Otis street there have been three cases of typhoid fever within a few years, all of the patients being newcomers in the neighborhood. I was unable to learn what the sanitary condition of the premises had been in the past, but at present I can find nothing to criticise unfavorably. There appears to be no unusual ill health prevalent in the vicinity.

From all the information I could gather by means of personal inspection, and diligent inquiry of neighboring physicians and other observant citizens, I have not the slightest doubt that while there are numerous and glaring unsanitary conditions in the vicinity, the real cause of the cases of typhoid fever occurring in Thomas R. Jones' house is to be found in the grossly defective cesspool, with its foul exhalations completely shut in from lateral air currents, and pouring through open doors and windows in the kitchen and dining room, to be inspired by the inmates, or worse still, to be absorbed by the food in course of preparation for the table, and thus brought in contact with the alimentary mucus membrane. It is proper to state in conclusion, that the dangerous character of this particular cesspool cannot be abated or removed by any amount of "cleansing" or emptying, however frequently performed. Its complete abolition alone can bring safety to the household.

Into this house, with its history of fever and its foul environment, late in December, 1884, came David Jones, fresh from his mountain

home, overlooking the vale of Wyoming, to visit his city brother and spend his Christmas holidays. Forth from this house early in January, 1885, again he went, but went not as he came. A poisoned blood now coursed through his veins; and shortly after returning to his home he was prostrated with what his physician soon pronounced typhoid fever, and lay on his back for many weeks, in his cottage on the banks of a little stream which supplies the reservoir of the town at the foot of the mountain. For the following facts I am indebted to Dr. Taylor, of Wilkes-Barre, who, at my request, has prepared an elaborate history of the epidemic for the use of the State Board of Health of Pennsylvania.

The maximum temperature was, on March 26th, 46.5°; March 27th, 56°; March 28th, 43°; March 29th, 37°,—increasing rapidly until April 4th, when a temperature of 70° was reached.

March 26th, with a maximum temperature of 47.5°, is the first day on which any considerable thaw could occur. Upon the evening of this day the superintendent of the water company visited the reservoir to ascertain whether it would be allowable to discontinue the pumping of river water. He found the first and second reservoirs almost entirely empty, while the third was filling rapidly, the short pipe, which allows the water to discharge from the bottom of the third into the stream leading to the second reservoir, being tightly frozen. He caused a fire to be built to melt the ice in this pipe, and then stopped the river pumps—the honest act of an honest man, bent simply on the discharge of his duty, and with kindest intent. But of what a catastrophe was he the unconscious usher and hastener. The water, with its accumulated typhoid fever poison, was discharged from the bottom of the third reservoir, ran down to the second, on to the first, and was thence distributed to the town, in all probability between the 28th of March and the 4th and 5th of April. Let us now turn our attention for a minute to the unsuspecting hamlet at the foot of the hill, over which hangs so terrible a doom. Plymouth, a mining town of some eight or nine thousand inhabitants, is situated in the Wyoming coal region of Pennsylvania, in Luzerne county, upon the right bank of the Susquehanna river, three miles below the city of Wilkes-Barre.

Owing to the development of coal lands, it has grown within a few years from an insignificant village to its present proportions; but its progress in science and improvement has not kept pace with its material development. A large portion of the town is built along the main street, which extends for more than a mile nearly parallel with and close to the Susquehanna river. As the town has grown, it has gradually extended backwards towards the hills beyond, which in the main part of the town, even a short distance from Main street, rise somewhat abruptly towards the north, so that Back street, although

not far removed from the river, is nevertheless situated a number of feet higher. As a large part of the town is thus upon a side hill, there is but little difficulty in disposing of surface water, which readily finds its way into the Susquehanna. No system of sewers and no effort at systematic drainage have ever been introduced, and the borough council seem singularly apathetic in the matter of sanitary reform. The drainage from each house is into cesspools situated in the back yard, or, in some cases, it is even into the streets themselves, which in parts of the town have not a proper arrangement of gutters for disposal of this drainage.

The health of the town, however, in past years, has not been greatly different from that of other neighboring towns of the Wyoming valley similarly situated, and inhabited by a similar class of people. It is true that malarial diseases have prevailed at different times, and each year has furnished quite a number of cases of typhoid fever; but at no time in previous years has the latter disease been so prevalent as to be regarded with alarm, either by the physicians themselves, or by the people at large. When, therefore, about two weeks after the incident I have mentioned, the epidemic in question appeared, and the inhabitants were stricken down by the hundreds in a very few days, great consternation followed among the people, and the inquiries were naturally made on all sides,—

1. What is this terrible sickness that is upon us?
2. What is the cause of so unusual an outbreak?

It appeared suddenly, following upon a few days of warm weather, which had caused the breaking up of the ice upon the river and the melting of large quantities of snow upon the hill sides. Its ravages were not confined to any section of the town nor to any class of people, but the rich and the poor, the clean and the unclean, were alike attacked. From careful inquiry made early in May, I ascertained from the physicians of Plymouth that the first case belonging to this epidemic occurred on April 9th, and that from this time on the disease spread rapidly. During the week beginning April 12th, from fifty to one hundred new cases appeared daily, and on one day, it is said, two hundred new cases were reported. In the early history of the epidemic, so severe were the symptoms, and so alarmingly rapid was the spread of the disease, that some doubts as to diagnosis prevailed for a short time, even among some of the medical gentlemen in attendance. It was variously declared to be typhoid fever, malarial fever, typho-malarial fever and typho-malarial meningitis; but in a very short time its nature was made manifest, and the doubts no longer existed that a true epidemic of typhoid fever was hanging over the doomed borough of Plymouth. The first post-mortem examination was secured only after urgent solicitation, the people being singularly averse to any such examination, notwithstanding many had already died. This

autopsy was conducted by Dr. E. O. Shakespeare, of Philadelphia, on May 10th, in the presence of several physicians from Wilkes-Barre and Plymouth. Two other examinations were made on the following day, by Drs. Shakespeare and French, and in every case the characteristic lesions of Peyers' glands were found. If doubt as to diagnosis lingered in the minds of any, it was finally dissipated when these autopsies showed the disease to be genuine typhoid fever, and thus answered the first question. In considering the possibility of one patient's poisoning more than a thousand in Plymouth, we must bear in mind all the attending circumstances:

1. The accumulation of weeks, which equalled the dejecta from many ordinary patients, and which lay for a time dormant upon the snow and frozen ground.

2. The nearness to the stream. The house is so situated that all of the excreta was thrown within a few yards of its banks, and the conformation of the ground is such that its surface water could not possibly drain in any other direction.

3. The unusually warm weather, which caused a sudden thaw and poured the surface water into the empty reservoir.

4. The concentration of the poison in a small amount of water.

5. The short distance to the town and, finally, the possible preparation of the soil for the reception of this seed, which sprang at once into vigorous growth and ripened for an abundant harvest of death.

As for the second, no link is wanting in the chain of evidence to show that the epidemic was due to the contamination, by the stools of that single patient, of the stream supplying the reservoir several miles distant from the town. The magnitude of the epidemic and the clearly defined relations existing between the first and the succeeding cases combine to make this one of the most instructive as well as one of the most terrible instances which ignorance and negligence have contributed to the records of disease.

Other investigations have been made and the same conclusions have invariably followed except in one instance. Dr. Torrey, of Scranton, in the New York *Medical Record*, considers four factors to have been active in the production of the epidemic, viz: polluted mountain water, polluted river water, polluted milk and polluted air. This, so far as I know, is the only article published by any investigator, expressing views different from those contained in this paper.

The epidemic, as stated, began early in April and continued with diminished virulence on through the spring and summer, and even into the fall months. This continuance was not due to the first cause but in great measure, no doubt, to secondary infection. Even after the nature of the sickness became known and its cause fully explained great carelessness still prevailed among the people in regard to disposing of excreta, and even physicians themselves did not all exercise such care as the urgency of the case demanded.

There were in all 1,104 patients ill with the fever in Plymouth who properly came under the head of this epidemic. There were other names reported, but some of them were down as having been attacked in March, and two as begun in February. Clearly these should be ruled out of the reported number.

It is true that the date of the attack in each case was not gathered by the committees until September, and some allowance should be made for forgetfulness on the part of the patients, but as it was clearly shown from the testimony of all the physicians in attendance that the epidemic did not begin until April the cases reported for March either really belong to April or do not belong to this epidemic at all. Of these 1,104 cases

713	were taken sick in April,
261	“ “ May,
83	“ “ June,
31	“ “ July,
15	“ “ August,
1	“ “ September,

thus showing at a glance the great virulence of the poison contained in the water in the early days of April. If to the above number we add those who were taken ill in Plymouth and went to Wilkes-Barre and other places to be cared for, and also the visitors who took the poison in Plymouth and in whom the fever developed at their own homes we shall find the actual number of persons affected considerably over 1,100. There were 605 males and 499 females. Up to October 1 there were 114 deaths or a mortality of nearly 10½ per cent. The average age of those who died was 24.05 years, and the average duration of illness, 3.33 weeks. Of the 990 who recovered the average duration of sickness was 8.28 weeks; but this no doubt is meant to include convalescents as well.

Dr. Morris Stroud French, of Philadelphia, one of the physicians sent up by the citizens' relief committee of Philadelphia to assist in establishing a hospital and supplying food and medicines to the destitute and fever-stricken inhabitants, says: "I would say that the total number of sick was 1,153, the population being estimated at 8,000. Of those attacked with the disease 114 died. The proportion of deaths under treatment in the hospital was about 3 per cent., which is unsurpassed by the records of any hospital in the world." At my request Dr. French undertook an inquiry into the financial outlay necessitated by the epidemic. The work was done by ward committees of the inhabitants, and the record comprises the names of all the sick, by wards, their ages and duration of illness, the number of deaths, the money actually expended in each case, the loss of earnings during illness, and the loss of earnings of those who died, but not the estimated value of the lives of the decedents. The expenses of the hospital are also given. The actual outlay is thus found to have been

\$67,100 17, of which amount \$8,000 was expended in establishing and carrying on the hospital. Of those who recovered, the loss of earnings during illness was \$30,020.08, making the total cost of the epidemic \$97,120 25. It will be observed that this is actual hard cash, not an estimate. By the 114 deaths, monthly wages to the amount of \$1,534 96 ceased, showing a loss of yearly income of \$18,419.52.

The State of Pennsylvania contributed \$5,000, the amount of her appropriation for the expenses of the State Board of Health for an entire year, to the support of this single hospital for a few weeks. I append Dr. French's table of totals, by wards.

Stimulated by the universal excitement and apprehension produced by this startling outbreak, the Legislature of the State at length yielded to the solicitation of physicians and philanthropists who had for the past twelve years been asking for the establishment of a central bureau for the protection of her sanitary interests, and thus out of the agonies of Plymouth was the State Board of Health of Pennsylvania born. It is for that board to show on which side of the debit and credit sheet the balance should be struck.

TABULAR STATEMENT of the Cost of the Plymouth Epidemic, by Wards.

No.		Died.	Cost of sickness.	Loss per mo. of those who died.	Loss of earnings during sickness.
138	1st ward, . . . . .	14	\$5,094 00	\$39 00	\$3,401 00
67	2d ward, . . . . .	7	1,466 35	100 00	1,058 00
227	3d ward, . . . . .	17	14,511 25	286 00	6,094 00
134	4th ward, . . . . .	20	12,019 00	286 00	1,852 00
156	5th ward, . . . . .	20	7,239 36	575 00	4,476 00
157	6th ward, . . . . .	7	7,079 00	94 96	3,919 58
60	7th ward, . . . . .	7	2,650 00	100 00	1,433 00
63	8th ward, . . . . .	4	2,754 00	130 00	2,533 00
82	Turkey Hill district, . . . . .	10	3,171 50	238 00	3,372 50
49	Township 2d Dist., East Div., . . . . .	3	2,016 00	100 00	1,159 00
20	Welsh Hill district, . . . . .	5	1,099,71	72 00	122 00
1153		114	\$59,100 17	\$1,534 96	\$30,020 08

Hospital (about), . . . . . \$8,000 00

Loss earnings, . . . . . \$67,100 17  
30,020 08

Grand total, . . . . . \$97,120 25

DR. PLYMOUTH TYPHOID EPIDEMIC OF 1884. CR.

To expenses of 1,153 sick at their homes, . .	\$59,100 17	By A
" expenses of 1,153 sick at hospital, . . .	8,000 00	STATE BOARD
" loss of earnings during sickness, . . . .	30,020 08	OF
" loss of annual earnings of 114 decedents, . .	13,419 52	HEALTH
Total loss, neglecting value of lives and injury to all business interests, . . . . .	\$115,539 77	FOR
		PENNSYLVANIA.

**B. Report of an Inspection of the Quarantines Maintained upon the Atlantic and Gulf Coasts from the St. Lawrence to the Rio Grande.**

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By JOHN H. RAUCH, M. D., *Secretary Illinois State Board of Health.*

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At the July, 1885, meeting of the Illinois State Board of Health the Secretary was instructed by a resolution of the Board "to inspect the methods of quarantine of the Louisiana State Board of Health and their actual operation at the stations below New Orleans; and also to extend his inspection of quarantine methods and regulations to such other ports and places as he may deem necessary in the interests of the public health of the State, with especial reference to the exclusion of Asiatic cholera and small-pox."

Such inspection was designed to supplement the action of the Board—inaugurated on receipt of the first information that Asiatic cholera had again invaded Europe, threatening another pandemic extension—and which action aimed to secure the best attainable sanitary condition of the territory under its immediate jurisdiction as one of the most important preparations against the spread of the disease within the State, should the contagion be introduced.

The geographical position of Illinois—within twenty-four to forty-eight hours of all the important ports on the Gulf and Atlantic Coasts—its commercial relations, the extent and character of its means of communication, and the fact that fully one-half of the immigrants to this country come into or pass through the State, most of them remaining at least long enough to communicate contagion and under conditions favorable to such communication, obviously make the administration of these quarantines—with special reference at this time to the exclusion of Asiatic cholera—a matter of sufficient importance to warrant the Board in securing all accessible information concerning them, the better to enable it to discharge its duty in connection with the protection of the lives and health of the citizens of the State.

In the present epoch of quarantine Illinois has a direct interest—chiefly commercial—in the exclusion of yellow fever from the Mississippi Valley; in the exclusion of vaccinally-unprotected immigrants at the North Atlantic ports for the protection of her own territory from small-pox; and in the exclusion of Asiatic cholera generally, whether it threatens by direct importation from Europe or mediately through the West Indies, Mexico and South America. In brief, the State is concerned in the condition of the sanitary coast defenses from the mouth of the St. Lawrence to the mouth of the Rio Grande.

**PRESENT STATUS AND PROSPECTS.**

It is hardly necessary to say that this country is not yet free from danger of an invasion of cholera simply because there is now a cessa-

tion of alarming reports from Europe. Periods of remission, more or less complete, have characterized every epidemic spread of cholera since it first invaded the latter country. Until it entirely disappears from the European continent it will not do for us to relax our vigilance or to remit a single precaution. On the contrary, this delay in its march should be utilized to strengthen our defences, and to perfect our precautionary system. It must be remembered that the duration of a cholera invasion of Europe is not limited to two or three years. From the date of its first appearance in 1829-30 in Russia, to its final extinguishment in Italy, Austria and Germany, a period of seven years elapsed, during which, at one time or another, every one of the Continental countries was invaded—some of them more than once. Similarly in 1847, it again entered Russia at two points, and before its final disappearance in the Levant in the winter of 1855-56, it had traversed every part of the Continent and invaded Great Britain. In its last pandemic spread it appeared first at Malta in 1865, continued to ravage various parts of Europe until 1869, when there was a complete remission, only to break out again in 1871, and finally disappear in 1873.

With immigrants from every portion of Europe continuously landing upon our shores and rapidly distributed throughout the interior, we will not be freed from this menace until every trace of the contagion in that country has vanished. At the close of the year the disease still remained in southern Spain, in France at Briest, in Italy near Venice, whence it had spread to the Austrian port of Trieste, and it has also effected a landing on the Western hemisphere, in the French penal colony Cayenne. Thus far the disease has not extended in Europe to the regions whence our heaviest foreign immigration is derived, and to this fact is probably largely due our present immunity. When the German and Scandinavian countries and the British Islands become infected, if they should, our serious danger will then begin.\*

I am often asked: "Do you expect to keep cholera out?" To which my reply is, that it is the duty of every sanitary authority to try to do so; to strengthen the weak places and perfect the strong; to utilize every possible resource; to secure the best attainable condition of his own immediate territory, and to put himself in a position to receive help from, or to extend help to others in fighting and excluding a common foe. We may not be able to entirely shut it out, but it will be a great achievement if its invasion be postponed and its spread limited, and greater still, if it is prevented a lodgment in this country. If an outbreak at a port or locality can be deferred until toward cold weather, that ally would itself help us to extinguish it, and it might require a fresh importation the next season to start another. It is our duty to try to shut it out, and not fold our hands

\* Reports continue to appear in the public press of new outbreaks in Spain and elsewhere.



supinely and join in the condemnation of quarantine and preventive methods, which, in a great measure, are a new outgrowth since the Fever Summer of 1878, which have received a great stimulus to development by the present dread of cholera, during the past two years, and which, so far as they have been tested in small-pox and yellow fever, give promise of success with the Asiatic pestilence. With a sufficient number of National refuge stations, (there should be at least one on the Texas coast and one for New England, in addition to those on the Delaware Bay, Hampton Roads and Sapelo Sound, and all of them should be as fully equipped as that at Ship Island,) with properly-appointed quarantine establishments at the larger ports, and inspection stations at the smaller ones, the entire system to be mutually coöperative, governed by the same general rules and regulations, kept fully informed of public health conditions abroad by consular agents and intelligent medical inspectors when necessary, there would be no reason to apprehend the introduction of cholera or any other foreign pestilence.

#### QUARANTINE IN THE PAST.

A brief summary of the origin and varying phases of quarantine in North America will be useful in this connection, mainly as serving to emphasize the distinction between the ancient and modern system, and also for information.

From the date of the earliest establishment of quarantine in this country down to the present time, its efficiency and the public interest in it have been fitful and spasmodic, dependent upon some real or fancied pressing emergency. The ravages of imported small-pox led to the passage of the first quarantine laws in 1698, and these were added to from time to time, and either vigorously enforced or more or less neglected as that disease increased or declined with the conditions of immigration, and the slave-trade. The plague through Mediterranean commerce and outbreaks of yellow-fever at long intervals, also affected quarantine laws and practice until near the close of the last century. For nearly thirty years, ending in 1791, the country was exempt from yellow fever, and during this period little attention was paid to the subject. That exemption, it may be noted, was due to the suspension of direct commerce with the West Indies through the enforcement of the colonial acts by Great Britain; but after the Declaration of Independence, commerce with the West Indies and the Spanish Main was gradually reëstablished, and in 1791 began the yellow-fever epoch of quarantine following the increasing ravages of the pestilence in the principal seaports of the country, while small-pox gradually lost much of its importance after the introduction of vaccination by Jenner in 1799. To yellow-fever, after the war of 1812, and taking the place of small-pox as a quarantinable disease, there was added typhus or ship-fever, and this disease—aggravated

and often developed during the long voyages in sailing vessels with crowded steerages and a gross neglect of hygienic observances—continued to increase in frequency and severity with the increase of immigration.

In 1832, Asiatic cholera was added to ship-fever and yellow-fever, and although this new plague has only affected quarantine by its four epidemic visitations separated by long intervals throughout more than half a century, it marks another epoch in quarantine. Meanwhile, the yellow-fever zone in North America had become practically contracted to south of Philadelphia—once the most terribly scourged of American cities—and ship fever had lost much of its significance through the substitution of steamships for sailing vessels, and the enactment and enforcement, both by this country and by foreign countries, of laws for the prevention of overcrowding and for the protection of the health of immigrants. With the decline of ship-fever, small-pox again began to increase in consequence of a neglect of vaccination or its imperfect performance, and this disease again affected the public health more or less severely as the tide of immigration swelled or ebbed.

Within the past quarter of a century small-pox has more than once assumed epidemic proportions as in the period from 1868 to 1873 and from 1879 to 1883; yellow-fever has prevailed locally from time to time, and as an epidemic in the Mississippi Valley in 1873, 1878 and 1879; cholera spread throughout the country in 1866-67, and invaded nineteen States west of the Alleghenies in 1873; and these three diseases with their varying manifestations—occasional long intermissions, followed by violent and disastrous epidemic outbreaks—have dominated the quarantine question during this epoch.

In the few years immediately preceding this period some progress was made in an organized attempt to reform the abuses of quarantine, and to frame a system in accord with the increasing knowledge of epidemic diseases—one which should be freed from the unnecessary hardships and rigors of quarantines, revived or improvised in the face of existing danger, and too often inspired and enforced by an unreasoning dread and terror—similar to those witnessed in southern Europe during the past two years. This attempt was inaugurated by Dr. Wilson Jewell, of Philadelphia, one of the foremost sanitarians of his day, and who, in 1856, proposed the establishment of "a uniform code of regulations, operating alike in all respects, and offering the least resistance to an active commerce, and with a humane regard for the health of the passengers and crews, and the comfort of the sick on board of all vessels detained at quarantine stations." A "Quarantine Sanitary Convention" was held in 1857 for the purpose indicated, and some progress was made during its subsequent sessions when the outbreak of the Civil War put an end to the movement.

It may be here remarked, in passing, that these few quoted lines

indicate the essential features of the quarantine of those days. They were primarily quarantines of detention or exclusion, inconsistent with an "active commerce;" the "health of the passengers and crews, and the comfort of the sick," were matters of secondary importance and the enforcement of sanitary measures confined to proceedings of a most primitive character where such measures were attempted at all. Little attention was paid to disinfection, purification, isolation of the sick, and the other measures which now receive most attention. The regulations entailed great personal sufferings and hardships, and vexatious delays and losses to travel and traffic, while they generally failed to protect the country from the introduction of these exotic diseases. It is not to be wondered at that "quarantine" has received so much condemnation.

#### COAST DEFENSES SHOULD BE UNDER NATIONAL CONTROL.

During all this time, from the earliest date to the present, the control of quarantine has remained entirely under the jurisdiction of State and local authorities, except during the brief period in which the National Board of Health exercised its limited quarantine powers under the act of 1878 and which expired in 1882. It is this absence of adequate National health authority and legislation, and the fact that, in such absence the maritime quarantines are controlled and administered by State and local authorities—resulting in diverse, and frequently conflicting, regulations and requirements and of necessity, in a tendency to limit precautions to their own individual interests, commercial as well as sanitary—which throw upon interior States the responsibility of fully informing themselves of the strength or weakness of these outposts, in order to know where to anticipate danger and how to make their own preparations to meet it.

At its last session, Congress appointed a commission to examine and report upon the measures necessary for the defense of our seacoast against a foreign armed enemy, and a distinguished publicist and statesman, Mr. Tilden, has recently urged this as a paramount duty of the Government. Millions of dollars have already been expended for such defense, and millions more will probably be forthcoming to meet this possible contingency. But the assaults of foreign contagion are not a contingency. They are actual events, and during the past twenty years they have cost the country, an aggregate loss of life only less than that of the great war immediately preceding. Every sanitarian and many of our leading statesmen know that this actual and ever-recurring loss is wholly and entirely preventable by the expenditure of a sum which sinks into utter insignificance before the millions which will be appropriated for the protection of our coasts against a possible future danger.

But thus far neither sanitarian nor statesman has been able to overcome the petty jealousies of individuals, communities, and of States

themselves, so as to secure the legislation necessary to remedy even the present confusion. Such sanitary measures as are now enforced by the National Government are based upon authority derived from the act of April 29, 1878, to prevent the introduction of contagious or infectious diseases into the United States. But the late Secretary of State, Mr. Frelinghuysen, and the late Secretary of the Treasury, Mr. Folger, both decided that the act in question, having been repealed by the act of June 2, 1879, could not be revived by the expiration of this latter act. The point would have less practical importance if the authority which assumes to act under it can and will furnish the country the necessary protection in the present emergency. Practical sanitary executives are less concerned, just now, as to who exercises the authority and by what right, than in the questions: Is the authority wisely exercised? Is it sufficient? May we rely upon it implicitly? If not, to what extent, and how can we remedy its deficiencies?

It is by no means meant by this that it would not be better that there should be a properly organized National health department, acting under clear and undisputed legal authority, and supplied with funds adequate to its legitimate necessities. The present status of National sanitary legislation and of the National sanitary executive is admittedly defective and unsatisfactory. The history of the recent attempts to control the disinfection of rags; the complications at the port of New York concerning consular bills of health; the strictures upon the inspection service maintained along the coast, and in the matter of inspections on the Canadian frontier during the recent small-pox epidemic; the complaints of various boards of health that they are directed to look to the associated press for information and warning concerning threatened danger from abroad, to their ports and territory\*—and many other similar matters point to the necessity for a well-considered and radical revision of existing National sanitary legislation.

Consular bills of health, which are now as a rule almost worthless, might be made of the greatest value; and these, together with the prompt publication of direct and official information concerning the sanitary status of foreign ports—such information to be secured by competent persons—are essential to the prevention of the introduction of foreign contagion. Obviously such measures can be regulated, controlled and provided only by the National government.

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\*Both for the Illinois State Board of Health as its secretary, and for the Sanitary Council of the Mississippi Valley as its executive officer, I have attempted to secure such information—asking for copies of consular reports, or the essential facts contained therein, as to the existence of epidemic contagious diseases at ports in commercial relation with this country and with especial reference to Asiatic cholera; also for the addresses of medical inspectors stationed at foreign ports, etc. The Secretary of State, in acknowledging the receipt of my requests, stated that they had been referred to the Treasury Department, informing me in effect, that charge of all matters pertaining to the public health was assumed by that branch of the National government. No reply has yet been received from the Treasury Department nor from any of its bureaus.

## POSSIBILITIES OF PRESENT COAST DEFENSES.

Nevertheless, I am more than ever convinced, since completing this inspection, that Asiatic cholera, as well as small-pox and yellow fever, may be effectually excluded from the United States by an intelligent use of the agencies still at our command. This is not a matter of speculation or theory. A great advance has been made since 1878. A quarantine of exclusion of these three diseases is now a matter of certainty, depending upon prompt notification of threatened danger; vigilant supervision over commercial intercourse with infected localities; inspection of all immigrants and the enforcement of their vaccinal protection; sanitation and purification of infected vessels and cargoes; isolation of those sick with these diseases; the surveillance of suspects during the periods of incubation; and the employment of other well-defined preventive and precautionary measures which now constitute the best modern sanitary practice as applied to maritime quarantine.

Cholera has never yet been kept out of this country after becoming epidemic in Europe, and I admit that quarantines, as conducted in that country, have proved ineffectual to control the spread of the disease. But the conditions which obtain here are radically different from those in Europe. In that country, as I have said elsewhere,† a narrow strait or sea, a river, a mountain chain, or merely a territorial boundary line, with its custom-houses and passport system, defines the limits to be guarded, and forms the only physical barrier between the quarantiner and the quarantined. Here, the whole width of the Atlantic intervenes between us and the infected country. There, cordons and quarantines mean privation, misery and suffering, and ultimately, starvation. Here, the Nation could exist unaffected in all her material interests by a quarantine whose period of detention is limited to the time necessary to destroy contagion through the rapid processes of modern disinfection and sanitation. There, it may be true, as alleged, that a quarantine of exclusion is impossible of execution, and that the attempt to maintain it does more harm than good, in leading to numberless contraband practices by which the disease may be introduced in unsuspected ways. None of this is true when applied to the exclusion of Asiatic cholera from this country; while to accept the statements unquestioned would cause vigilance to be relaxed, would invite contagion to our shores unimpeded, and would finally throw upon individual communities the burden and the responsibility of fighting the disease at an immense disadvantage—that is, of fighting it at home and from many quarters, instead of on the outer lines and from only one direction.

Those outer lines, even with some defects and weak places, I be-

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†Practical recommendations for the exclusion and prevention of Asiatic cholera in North America. An address delivered at the opening of the National Conference of State Boards of Health, St. Louis, Mo., October 13-15, 1894.

lieve to be even now sufficiently strong to keep out the disease if proper vigilance and thoroughness be exercised, if all the facilities be utilized, and if timely notification of threatened danger be given by the national government.

The next year or two, however, will furnish a tolerably conclusive test of the efficiency of quarantine to exclude the pestilence from this country.

#### IMMEDIATE RESULTS OF THE INSPECTION.

During the progress of the inspection it was observed that the comparison instituted and the information furnished prompted quarantine officers and health authorities to avail themselves of facilities previously overlooked or neglected, and to put themselves in communication with each other for purposes of mutual coöperation and support. At many of the stations those in charge invited criticism and suggestions, while others would not rest satisfied until their facilities and appliances were made more complete. Suggested improvements have already been made in many instances and others will doubtless be secured.

Not the least among the good results which are already perceptible is the recognition of the fact that the administration of quarantine at a given port is not a purely local measure; but that the country back of it, and communities distant in space but in close proximity in point of time, are also interested. Since States and communities continue to control maritime quarantine, and in many instances are jealous even of a suggestion of Federal interference, it is right that they should recognize the full import of their obligations. Nor should they overlook the fact that these distant communities have the power to both help and punish. Illinois, for example, by recently refusing entrance to immigrants coming through ports which were lax in enforcing vaccinal protection, furnished a powerful argument to the quarantine officers at such ports whereby they secured compliance with their requirements by the steamship companies. This reflex action may be carried still further. If a port or locality should notoriously disregard the precautions necessary to prevent the access of cholera it would be an obvious duty of self-protection not only to exclude immigrants but to cut off all intercourse with such port or locality. With the danger of such a contingency clearly recognized the authorities would not only be apt to exercise proper vigilance, but all transportation and commercial agencies—railroads and steamships—would become quarantine aids. Captains and officers would have an additional incentive for keeping their vessels in good sanitary condition and for promptly reporting cases of suspicious sickness during the voyage, if it came to be understood that failure in these respects would be followed by loss of trade and employment.

One obvious advantage which may be expected to follow the publi-

cation of this report, will be the notification to all interested of the weak places in our line of coast defenses, and this will naturally ensure greater care and vigilance at such places and greater watchfulness of them by others.

To some places which I was unable, from want of time and pressure of other duties, to personally visit and inspect, the following series of questions was addressed, and subsequent correspondence elicited the necessary information in such cases:

1. What are the quarantine facilities at your port? Please furnish copy of laws or ordinances, and of rules and regulations.
2. How far from the city is the quarantine station?
3. Is the station out of the track of commerce or travel?
4. How far from the city are vessels inspected?
5. How are vessels, cargoes and persons disinfected and purified?
6. What are the periods of detention and seasons?
7. How would a cholera-infected vessel be treated?
8. Under what circumstances would vessels be sent to the nearest refuge station?

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#### Atlantic and Gulf Coast Quarantines.

LOCATION OF STATIONS, EQUIPMENT, POWERS AND AUTHORITY, RULES AND REGULATIONS, METHODS, ETC., ETC., FROM CANADA TO TEXAS, INCLUSIVE. ARRANGED GEOGRAPHICALLY.

*Canada.*—On the 9th and 10th of October, I made an inspection of the Grosse Isle quarantine establishment, on the St. Lawrence river, about twenty-nine miles below Quebec. Dr. F. Montizambert, Chief Quarantine Officer of the Dominion, telegraphed me on the 9th that he would send his yacht to meet me at St. Thomas, a station on the Inter-Colonial railway, about thirty miles from Quebec. We left the wharf at this place about 4.30 p. m., but owing to head winds were unable to use the sails, and the men had a weary pull of two hours and a half to make the five miles to the station against the strong current and ebb tide. As this boat is the sole means which the station possesses for boarding a vessel for inspection purposes, I became quite convinced that a steam yacht or launch is a necessity in such a swift current and with such high tides as obtain in this stream, the channel being fully two and one-half miles from the station. The Grosse Isle quarantine station is an island about one and one-half miles long, divided into sick, central and healthy divisions. In the sick division are the hospitals with the necessary adjuncts. There is a two-story brick hospital, with one hundred beds, including some in private wards for cabin passengers, ship's officers, etc.; and a one-story wooden shed with about seventy beds. There are also ample facilities for disinfection, and for the purification of clothing, etc. In the central division are the quarantine officer's and chaplain's residences, and quarters

for the employés, eight in number, embracing a hospital steward, a sergeant of police (who speaks four languages), a baker and the boat's crew. From this point ships that stop opposite the station for inspection are gone out to. In the healthy division (a mile and a quarter from the hospital) are the houses of detention with accommodations for about 2,000 persons; a large wash-house; a bakery; a furnace for hot-air disinfection; rooms specially arranged for fumigation; chapels, police barracks, etc. There is telephonic communication between the different divisions of the station, and telegraphic to Quebec. The disinfectants employed are chloride of lime, corrosive sublimate and sulphurous-acid gas. Labarraque's solution is also used for the sponging and washing of patients and attendants, and permanganate of potash for coloring dangerous solutions; chloride of lime in solution, four ounces to the gallon, is used in the vessels which receive the discharges of the sick. Infected clothing and bedding are steeped at once, in the wards, in a weaker solution of chloride of lime or of corrosive sublimate, and then boiled before being sent to the wash. The dry-heat oven is rarely used; what cannot be steeped for at least two hours, and then boiled for at least half an hour is generally burned, in the absence of a steam disinfecter. For fumigation, sulphurous-acid gas is used in closed apartments either from burning the crude sulphur, or from the copper reservoirs in which it has been stored under pressure, and which are obtained from New York.

Should a vessel arrive here with cholera, Dr. Montizambert proposes to treat her as follows: Land the sick and their attendants directly at the sick division, with every thing suspected connected with them. Land all the steerage passengers and their effects, and place them in the detention houses at the healthy division. Open all windsails, hatches, portholes, etc., on the vessel; have the bilgewater repeatedly pumped out or changed; supply unquestionable drinking water to all. All the luggage of the cabin passengers and the effects of the crew to be opened out on board; all body and bed linen to be steeped in solution of corrosive sublimate; and other effects, with the opened trunks, etc., to be repeatedly fumigated with sulphurous-acid gas in closed apartments. The vessel in all attainable parts, and notably the cabins, steerage and fore-castle, to be scrubbed with solution of corrosive sublimate and fumigated. The cargo to be opened up in as many places as possible, and then, the hatches, etc., being closed, the compressed sulphur dioxide to be poured in amongst it from the reservoirs. Should it seem necessary, the cargo would be landed to allow of its more detailed disinfection, and the more satisfactory treatment by washing, rinsing with corrosive-sublimate solution and fumigation of the empty vessel.

Whilst the vessel and those on board are thus being attended to, the steerage passengers and their effects are washed and disinfected on



shore at the healthy division. The attendants being always amongst them, would report by telephone at once any slightest appearance of illness, and in addition a regular medical inspection is made twice daily of all those under detention, viz: At 9 A. M. and 4 P. M. each day. Any one showing even doubtful symptoms is at once removed from amongst the others, placed in a ward of observation and thence returned to the healthy division or taken to hospital as may be required. Subsequent to completed process of disinfection, the vessel, passengers and crew would be detained for eight clear days after the occurrence of the last cholera case before being admitted to pratique.

The process thus described is carried out with any vessel that arrives with an infectious disease diffused amongst its passengers, except that the vessel is allowed to proceed after disinfection without further detention. With a cholera ship, however, application would be made by telegraph for authority to detain the vessel and all on board, and it would probably be accorded.

Grosse Isle was for a long while one of the most important quarantine stations on this continent. Over 15,000 victims of cholera and ship fever are buried on the island. It was established during the sailing-vessel period when,—as the result of the long voyage, crowded steerage and ignorance or disregard of all sanitary and hygienic observances—almost every arrival was more or less infected. For the requirements of the period, it was probably as well adapted and as completely equipped as any establishment in the world. The vessels then in use could easily approach its wharf and receive such treatment as was at that time considered necessary.

But with the advent of the huge ocean steamship—with its great draught, short passages, improved accommodations, and imperative demand for “quick dispatch”—the station has lost much of its importance. One set of conditions has largely obviated its necessity as a barrier against the introduction of epidemic contagion, while another set has created a necessity for improvements and modifications which have not been made. As a consequence, there is less attention paid to the maintenance of the station and to the enforcement of the regulations. During the season up to the 9th of October, the date of my inspection, only thirty-two vessels out of a total of 420 arrivals had stopped at the station for examination.

My observations and study of the enactments suggest the following as among the more important matters requiring attention, if this station is to be relied upon, to prevent an invasion of cholera or other grave epidemic contagious disease via the St. Lawrence river\*—having regard on the one hand to the efficiency of service, and on the other to the interests of commerce:

1. The boarding at Rimouski and inspection of the mail steamers is an absolute necessity, and all foreign vessels bound up should be in-

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\* Cholera was introduced into this country by this route in 1832.

spected at or below Grosse Isle, so that if the vessel needs to be detained at quarantine the fact can be promptly ascertained, and if healthy and free from danger of conveying infection or contagion, she may proceed without unnecessary delay.

2. The revision of the regulations so as to secure the compulsory sending back to quarantine of any vessel that passes up to Quebec without having been inspected, no vessel to be allowed to enter the custom house at Quebec or Montreal without first exhibiting the certificate of the inspecting medical officer.

3. Better facilities for boarding vessels at the quarantine station are required as already suggested.

4. The adoption of some of the more modern appliances for disinfection, as for example, a steam disinfector for rags, textile fabrics, etc., or the methods employed at the Mississippi quarantine of the Louisiana State Board of Health.

5. The vaccinal protection of the immigrants should be enforced.

6. The addition of another medical officer to the staff of the station.

7. Should it be impracticable to thoroughly disinfect a vessel or cargo, wharfage facilities, in addition to those existing at present, should be provided for vessels of the heaviest draft that navigate the St. Lawrence.

The modifications herein briefly indicated, with the facilities already possessed and the natural advantages fully utilized, would, to a great extent, remove the apprehension of cholera finding its way into the country through the St. Lawrence, and would materially obviate the necessity of restrictions over traffic and travel between the Dominion and the United States. Sweeping and onerous requirements, entailing unnecessary expense and delay—especially if such expense and delay be due to inadequate equipment and appliances—defeat the very object of quarantine and provoke avoidable hostility and opposition, or lead to neglect and indifference. In order to make a quarantine effective as a safeguard to the public health, nothing should be required which is not clearly necessary; the facilities and regulations should be such as to insure a minimum of interference and inconvenience consistent with the end; and every necessary requirement should be rigidly, continuously and impartially enforced.

The only diseases requiring attention at the present time are cholera and small-pox. Up to the time of my visit the vaccinal protection of immigrants was not enforced, and small-pox had repeatedly been introduced into Illinois and the Northwest by unvaccinated immigrants coming through the Dominion. Since my inspection, no unprotected immigrant is allowed to land, and under the present regulations the risk of imported small-pox contagion, via the St. Lawrence, is very materially reduced. A steam yacht has also been ordered to take the place of the yacht for boarding vessels at Grosse Isle. Upon

this will be placed the modern appliances for disinfection above indicated.

During my inspection I was urged to make my criticisms and suggestions direct to the quarantine officer, and subsequently the Dominion government invited me to communicate the same to them.

In addition to the quarantine on the St. Lawrence there are two other quarantine stations maintained by the Dominion government—one on Partridge island, for the port of St. Johns, N. B., and one on Lawlor's island, for the port of Halifax. These are subject to the same enactments as apply to the Dominion generally.

Dr. W. W. Wickwire, inspecting physician for the port of Halifax, writes me, under date November 20th, "the quarantine station is on an island in the harbor of Halifax, about three and a half miles from the city. This island, is owned by the Dominion government, and is used entirely as a quarantine station—the only persons living there permanently are the steward and his family. The island (Lawlor's) has an area of about one hundred and fifty acres. There are now hospital buildings affording accommodations for about one hundred persons, but additional buildings could easily and rapidly be constructed.

The quarantine anchorage, where inspection takes place, is about three-quarters of a mile from the city. Pilots are required to bring all vessels into this anchorage ground if there be any disease whatever on board, and there remain until inspected."

*Maine.*—The Navy Department has been in the habit of sending yellow-fever infected vessels to the Navy Yard at Portsmouth, New Hampshire, but owing to protests by the citizens of that city against such action, Dr. F. M. Gunnell, Surgeon General, under authority of the Secretary of the Navy, in 1884, established a refuge station on Widow's Island, in Penobscot Bay.

A temporary hospital and quarters for officers have been built, and an artesian well bored, from which an abundant supply of good water has been obtained at the depth of sixty feet. "The island is convenient of access from the sea, has excellent anchorage protected from storm winds, and affords a safe and desirable refuge for infected vessels coming north from the West Indies or Gulf of Mexico." The Surgeon General recommends in his report bearing date October 1, 1885, that permanent buildings be erected at this place; and a strongly constructed wharf, to facilitate the landing of heavy stores from vessels in order to accomplish thorough fumigation and disinfection. With the exception of this station there are no quarantine facilities along the coast of Maine, and this is under the control of the Navy Department. Why should it not be utilized as a refuge station, in case cholera is found on vessels in this neighborhood?

I visited Portland in August last, on account of the importance it possesses in this connection, owing to its being the winter port of the

Grand Trunk railway, and thus receiving a considerable immigrant travel during the winter months. I found that inspections were made only upon the arrival of vessels at the wharf, when they are boarded by the city physician. If contagious disease, such as small-pox, be found on a vessel, it would be ordered to the quarantine grounds about two miles from the city; those on board would be vaccinated, and such disinfection enforced as might be practicable under the circumstances.

The attention of the mayor, and subsequently of the State Board of Health, was called to the possibility of cholera being introduced by immigrants during the winter months.

*New Hampshire.*—Dr. Irving A. Watson, Secretary of the New Hampshire State Board of Health, writes under date of October 3, 1885: "Except under unusual liability to infection, no quarantine is maintained at Portsmouth. The only vessels that come into the harbor of Portsmouth are coasters from American ports, and a few vessels now and then from the British Provinces (New Brunswick and Nova Scotia). During the present month but one vessel has entered the port outside of coasters from American ports, and that was a vessel from New Brunswick loaded with railroad ties. The very small amount of shipping that comes into Portsmouth outside of our own coast trade, which is very small, consists of now and then a vessel loaded with railroad ties from the Provinces, and salt from Turk's Island. There is no passenger traffic whatever. The quarantine laws of the State, as well as the city ordinances of Portsmouth, are quite strict, and in the very few instances of contagious diseases that have been found on board of vessels coming into the harbor of Portsmouth, the masters of such vessels have notified the pilots, and a medical officer has been sent to them and suitable quarantine established.

"Formerly there was a quarantine station about a mile down the harbor, which was established and used exclusively by the government; it now exists unoccupied. There has been no occasion for the disinfection of cargoes, for many years, I think. The government has sent one or two vessels, among which was the Plymouth, up to this port to freeze out the yellow fever.

"I do not know of a single instance in which disinfection of vessels, crews and cargoes has been required. I have recently investigated the condition of affairs at this port, and do not find it necessary at the present time to establish a quarantine station. There is not the least probability of small-pox being brought to Portsmouth from Montreal and vicinity, or from the Provinces by water. On the other hand we have no infected cities to fear along our own coast, and as no vessels arrive from foreign ports, other than those mentioned above, there seems to be no demand whatever for a quarantine service. Should any circumstance arise that would make it necessary to establish such a service at Portsmouth, we would do so."

*Massachusetts.*—In company with Dr. S. H. Durgin, chairman, and Mr. George F. Babbitt, a member, of the Boston board of health, I made a visit of inspection to the Boston quarantine establishment on the 13th of August last. This is situated on Gallop's Island, about seven miles from the city, and comprises abundant hospital accommodations for contagious diseases in two buildings; a large storehouse for infected cargoes, connected with deep water by a suitable wharf and tramways; and upon another wharf is a building for disinfecting clothing, baggage, etc. The island is about twelve acres in extent, and vessels may lie at its wharves entirely out of the track of commerce. The arrangement of the building, etc., is compact and workmanlike, and everything was found in good order.

The boarding station is at Deer Island, about a mile and a half from quarantine, and the port physician resides at this station during the entire year. The quarantine steamer, Samuel Little, is also kept at the Deer Island station ready for boarding vessels, conveying the sick from vessels to the hospitals, etc. Since my inspection this vessel, built for the quarantine service thirteen years ago, has been ordered to be replaced by a new one with important improvements and better facilities for disinfection. The regulations require the port physician in quarantine to visit and inspect all vessels arriving in the harbor between June and November from any foreign port, except Canada and the Provinces, and from any domestic port south of Virginia. No vessel which has had on board, during her last voyage, any sickness of a contagious or doubtful character, shall pass quarantine without inspection and consent of the port physician. It is also provided by regulation that no vessel shall be allowed to bring any sickness of a doubtful or contagious character past quarantine during any season of the year. Every facility is provided for the speedy and comfortable transfer and the subsequent care of such persons as may arrive by vessels suffering from contagious or infectious diseases. The personnel of the quarantine establishment consists of two physicians and the necessary employés. The physicians are employed during the whole year. When quarantine duties do not demand their attention they are occupied in the city institutions on Deer Island.

In the large storehouse there is an apartment for disinfecting rags and other articles by the sulphurous-acid process, and there is also a large amount of storage capacity. The disinfection of clothing, personal baggage, etc., is effected by the steam process. The superheated steam is supplied by the quarantine steamer. For my observation the steam was discharged into the apartment provided for this purpose, and in a few minutes the temperature was raised to 220° F., at which point it was evident it could be maintained as long as desired.

All immigrants are examined on arrival, and are vaccinated or re-vaccinated if not protected by decidedly recent vaccination or revaccination. Careful scrutiny is bestowed on all persons and goods arriving

by vessel, and such cargoes, vessels and personal baggage as seem to require it are thoroughly disinfected as above indicated.

The administration of quarantine at Boston has received for the last nineteen years the direct supervision of the present chairman of the city board of health, and the access of cholera through this port is hardly likely to occur. During this period I have been able to trace small-pox cases to Boston very rarely, and none for several years recently. The methods pursued at this port demonstrate that the disease may be excluded.

*Rhode Island.*—The quarantine regulations of the port of Providence are under control of the board of aldermen, who appoint annually a health officer of quarantine, to execute such orders as said board may, from time to time, prescribe relating to quarantine. Dr. Charles V. Chapin, superintendent of the health department of Providence, writes, "that all vessels subject to quarantine are stopped about one mile below the city. Vessels are inspected by the health officer before they are allowed to come to the wharf, or have any communication with the shore.

"Our foreign commerce is very small, mostly with St. John, N. B. and with the West Indies. The only European arrivals we have are a few Italian vessels with sulphur.

"If any vessel was found to be infected, I would have her thoroughly cleansed and disinfected with sulphur or chlorine or both. Baggage and clothing of crew could be treated on shore at the small-pox hospital grounds, which are situated near quarantine. Our channel is so narrow that it is impossible for vessels to anchor very far from the line of travel."

*Connecticut.*—The quarantine facilities of New Haven, the most important Connecticut port, are described by Dr. Lindsley, secretary of the State Board of Health, as "not entirely satisfactory. No special preparation exists for the proper management of vessels subject to quarantine, excepting that the board of health of New Haven is clothed with full authority, to subject any such vessel to such regulations for the protection of New Haven, as said board may deem necessary.

"The vessel (and cargo, if necessary,) would be disinfected by the fumes of burning sulphur and subsequent ventilation, and washing with solution of corrosive sublimate or some of the preparations of chlorine. The clothing of the crew and their personal effects would be also disinfected, and they would be kept under supervision until danger of communication of the disease had passed.

"Vessels on which there has been no malignant or contagious disease during the voyage, and on which there is at present no sickness may come to any public wharf in New Haven harbor, and signal for the health officer; but no person is allowed to leave the vessel before the arrival of the health officer. In case of any sickness on

board, the vessel shall come to anchor within quarantine limits and signal for the health officer from there. The quarantine station, as you will see by the enclosed map, is only one and one-half miles from the center of the city, and in New Haven harbor directly in the line of travel.

"In case of the arrival of a cholera vessel, it would be detained in quarantine. There is no hospital provided for the reception of cholera. The patient would be kept on board under such care as was practicable, respecting isolation and disinfection, until a temporary provision could be made (by tents, probably) on the shore for his or their reception, after which the vessel would be disinfected. If the cargo was such as to require special apparatus for disinfecting it, we have none and should have to send the vessel to New York or elsewhere for that purpose."

*New York.*—About two-thirds of the total immigration and more than two-thirds of the total foreign imports into the United States pass through quarantine at the port of New York. Without assuming that these proportions may be taken as a measure of the relative importance of the New York quarantine compared with the quarantines of the rest of the country, its absolute importance cannot be overestimated. The individuals and their effects and the cargoes with which it deals, are distributed to every part of the continent, and while from climatic and other conditions, the port itself might be protected by given quarantine methods, it would by no means follow that measures adequate for such protection would ensure the safety of remote sections of the country from the disastrous effects of the importation of foreign contagion or infection through and beyond the port. Many improvements in the New York quarantine system have been made during the past twelve or fifteen years, and to a great extent in direct recognition of these considerations. During this period the interest of the interior in the administration of the system has come to be acknowledged and is allowed to exert some influence.

The statutes relating to quarantine at the port of New York are very voluminous, but the most important are to be found in Chapter 358 of the Laws of 1863, entitled "An act establishing a quarantine and defining the qualifications, duties and powers of the health officer for the harbor and port of New York," and in Chapter 592 of the Laws of 1865, amendatory thereof. Although there is a board of quarantine commissioners consisting of three members, the powers and duties prescribed by the law are practically exerted and discharged by the health officer aforesaid. In 1880, upon the establishment of a State Board of Health, this officer, together with the Attorney General and the Superintendent of the State Survey, were made *ex-officio* members of the State Board, but no control or authority over maritime quarantine is conferred upon or exercised by the board, except indirectly

through the *ex-officio* connection of the health officer, who is chairman of a standing committee of that body upon the subject of quarantine.

On the 10th, 11th and 12th of August, in company with Dr. William M. Smith, health officer of the port, I made a personal inspection of the quarantine establishment and of the methods enforced thereat. The quarantine anchorage is in the lower bay, a triangular area of about two and one-half miles along its sides, its northern apex being about eleven miles from the city and five miles from the health officer's station, near Clifton, on the left shore of "the Narrows." At the upper apex of the anchorage, and about four miles inside of Sandy Hook, is moored the quarantine ship, "Illinois," in charge of a deputy inspector.

After the first day of May and until the first of the ensuing November, all vessels from the West Indies, the Windward Isles, the east coast of South America, and the west coast of Africa, as also those from infected ports of the United States, are brought to an anchor near this vessel and boarded by an inspector from an ordinary row boat. The officer ascertains—1st. The present condition of the passengers and crew. 2d. The history of the vessel during the passage in reference to sickness, etc., and the sanitary history of the vessel while in the port of departure. The bill of health is then examined, and the sworn statement of the captain and medical officer of the vessel is next required, each being duly sworn, that the port or ports from which they sailed were, to the best of their knowledge and belief, perfectly healthy, being free from all malignant contagious and infectious disease; that no such disease existed among the shipping in said port or ports at the time of their departure, and that no case of sickness or death from small-pox, cholera, yellow fever, ship fever, or any contagious or infectious disease has occurred on board their vessel while in any port or on the passage.

A careful examination is made in every instance of the steerage, and if objectionable from filth, it is ordered to be immediately cleansed and then fumigated. If the vessel has been absent from the port of departure for a time, equal to or exceeding the usual period of incubation of the disease prevailing at such port, the passengers are inspected by the quarantine officer and the vessel is discharged under a permit.

If there is any sickness of a suspicious character resembling yellow fever, cholera or typhus, the sick are removed to the quarantine hospital on Dix Island. If the ship is less than five days from a port infected with yellow-fever, passengers and vessel are held until that period has fully elapsed. In the meantime the hatches are opened, the cargo and steerage are fumigated twice, at various intervals of several hours, with chlorine or sulphurous-acid gas.

All baggage, mails, and whatever articles liable to have become in-



fectured are put in a close apartment and submitted to disinfection by the agents mentioned. This done, the master of the vessel is given a "permit" and directed to the discharging anchorage in the upper bay, distant three miles from the city. Here (in the language of Dr. Smith's report), under the constant supervision of the quarantine police, and the frequent visitation of the health officer, the most perfect system of cleanliness is enforced. In the meantime the cargo is discharged upon open lighters. The exposure of the cargo to air in its transit to the dock, serves still further to remove the danger of infection. There is no instance of the propagation of disease from that source in the history of quarantine at the port of New York. The cargo being removed, the hold is thoroughly washed, and in the case of sailing vessels the limber-streaks along the keelson are taken up, accumulations of filth removed, and the air-spaces washed down, until the water returns clear of any evidence of impurity. A solution of sulphate of iron, or of bichloride of mercury is then used, with which to scrub and rinse the entire hold, inclusive of the air-spaces and limberstreaks. Finally, from fifty to one hundred pounds of sulphur, according to the size of the vessel, are burned under the hatches, which are closely covered. The ship's crew is then mustered, and examined as they pass before the health officer. If all are well the vessel is allowed to proceed to her dock without further delay. In vessels suspected of yellow-fever infection, the crew are not allowed to discharge cargo, or if they do, are submitted to a quarantine of observation for five or six days.

All foreign vessels not subject to visitation in the lower bay are boarded by the health officer or his deputy at the boarding station on Staten Island, a short distance above the Narrows, and opposite the health officer's residence. From May until November following, all vessels from ports "south of Cape Henlopen," are visited at this point, unless some of the ports south of this, become infected with yellow-fever, in which case vessels from such ports are examined at the quarantine station in the lower bay.

The quarantine hospital for yellow fever and other contagious diseases, except small-pox, is upon Dix Island, an artificial construction about two miles above the quarantine anchorage towards the Staten Island shore, out of the track of commerce. The hospital is built on the pavilion plan, has five wards connected by covered passage-ways, and has comfortable accommodations for three hundred patients. There are also on the island suitable quarters for officers and attendants, a disinfecting room and all the modern sanitary appliances. Small-pox cases are not treated here, but are taken to one of the city institutions on Blackwell's Island in the East River.

One mile above Dix Island is Hoffman Island, also artificial, and upon this are the buildings and appliances necessary for a quarantine of ob-

ervation. "Suspects" from yellow-fever, cholera, typhus or yellow-fever exposure, are here detained during the respective periods of incubation. Two immense structures furnish accommodations for about 2,000 persons, and in another building are the quarters for officers and employés, and for administration purposes. Abundant bathing and laundry facilities and disinfecting appliances are provided, and here as well as on Dix Island, are immense reservoirs and a number of cisterns for the storage of fresh water.

The health officer's station, or main quarantine station, is near Olif-ton, and at this place is the residence of the health officer, quarters for two deputies, and a good wharf. Vessels are here boarded from a commodious steam yacht, by which, also, communication with the other divisions of the quarantine establishment is maintained. The island and stations are connected by telegraph, and the health officer's quarters are also connected by wire with the city.

The personnel of the establishment varies with the exigencies of the season. In addition to the health officer, I found only two deputies employed, one upon the quarantine ship and one at the quarantine station. Dr. Smith himself attends to the sick in hospital, and was treating a yellow fever case (convalescent) during my visit.

Summing up, with reference to the exclusion of cholera and small-pox,\* the quarantine plant and facilities of the port of New York are unrivalled, the printed regulations judicious, and with proper vigilance, the service should suffice to prevent either of these diseases from obtaining access to the country through this avenue. But the entire system is hampered by a vicious financial policy which is, in effect, a farming-out of the service. At the other important ports the fees go directly to the municipality or State, and the chief executive officers are paid fixed salaries, and are provided with such employés as may be necessary to the proper and efficient conduct of the quarantine.

New York may exclude cholera under her present system, but more confidence would be reposed in the result if less were demanded of professional ability, personal integrity and executive firmness in the health officer, and if the system were freed from influences which are most deprecated by those who, without prejudice, best understand them.

*Pennsylvania.*—The maritime quarantine of the port of Philadelphia, and practically of the State of Pennsylvania, is enforced at the "Lazaretto," situated on the left bank of the Delaware river, about eleven miles below Philadelphia. In company with Dr. R. A. Cleemann, of the city board of health, and Dr. Benjamin Lee, Secretary

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\* Cholera found its way through this port to the eastern portion of this country in 1849, and to the country generally in 1865. No attention is paid to the vaccinal status of immigrants unless the disease is actually on vessels. As a natural consequence small-pox has repeatedly been introduced into the interior through this port.

of the State Board of Health, I made a visit of inspection to this station on the 6th of August last. The quarantine grounds are about ten acres in extent, surrounded by cultivated farms and separated from the main channel by Little Tinicum Island, between which island and the station there was formerly a navigable channel which was used as the quarantine anchorage, but is now too shallow for that purpose for large vessels. Quarantine was established at this point in the early part of the century, and sections of a law enacted in 1802 are still in force. There has been practically little change in the equipments or methods since 1818, except that a steamboat has replaced the many-oared barge used formerly in visiting, and that by this means vessels are inspected *en route*, not being obliged to come to anchor unless detention for sickness is necessary. The structures, comprising a large hospital (sixty beds), administration building, government warehouses, etc., are well built and spacious, but antiquated. For more than half a century the establishment was the best equipped on the continent. All vessels from foreign ports and such American ports as may be designated by the board of health of Philadelphia, bound for the port of Philadelphia, and arriving between the first of June and the first of October, are required to come to anchor as near the Lazaretto as the draft of water will permit, and there await the visit of the quarantine officers,—the Lazaretto physician and the quarantine master. The former administers the oath or affirmation to the captain, and examines personally into the state of health of all on board, and, in conjunction with the quarantine master, ascertains the sanitary history of the voyage, condition of port of departure, character of cargo, etc. The latter officer examines into the condition, with regard to cleanliness, of the hold, cabin and forecastle, causes the bilge to be pumped out and purified by fresh water, and ascertains whether any part of the cargo is in a damaged or infectious condition. If the vessel is satisfactory in all these respects, a certificate to that effect, signed by both officers, is furnished and she is allowed to proceed to the port. This certificate is addressed to the health officer of the port, to whom it must be delivered within twenty-four hours after the vessel lands at her wharf.

If any contagious or infectious disease (measles excepted) be found on board, or if the vessel be from an infected port, or if her cargo be considered dangerous as to contagion or infection, or the vessel's sanitary condition be unsatisfactory, the certificate is withheld and the necessary measures are instituted to render her safe from conveying contagion or infection. These measures are entirely within the discretion of the Lazaretto physician \* (of course under the control of the board of health of the city) and are enforced under his supervision by the quarantine-master. So far as they are prescribed they consist of purification "by ventilation, scrubbing and whitewashing."

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\* Appointed by the Governor.

Fumigation is effected by sulphur combustion in iron pots. There are none of the modern appliances for disinfection of vessels or cargo. No attention is paid to the vaccinal status of immigrants unless small-pox is discovered on a vessel; and as a natural consequence the disease has frequently been introduced into the interior through this port. Telegraphic communication has recently been established with Philadelphia

Owing to the filling up of the channel in front of the Lazaretto, large vessels detained in quarantine could not be kept out of the track of commerce as completely as is desirable. In examining the surroundings of the station we proceeded on the quarantine steamer as far south as Chester, at which place we found the revenue cutter from which inspections of vessels arriving in the Delaware Bay are made. In connection with these inspections I took occasion to repeat the suggestion made at Baltimore, to-wit: That the Government inspection service should be utilized as fully as possible, and to this end should receive the coöperation and recognition not only of Pennsylvania, but of the Delaware and New Jersey health authorities, State and local. This suggestion was subsequently acted upon by the adoption of a resolution by the Philadelphia board of health requiring all vessels from infected ports to report for the removal of sick sailors at the U. S. Quarantine Station at the Delaware breakwater before proceeding up the river.

Dr. Benjamin Lee, of the State Board of Health, wrote me on the 28th of September that "in company with Drs. Cleemann and Ford and several non-professional members of the city board, Dr. Wilson the Lazaretto physician, and Dr. Bailhache of the Marine Hospital service and National Board of Health, I visited the U. S. Quarantine Station, at the Delaware breakwater, on September 4. Dr. Marshall of the Delaware State Board joined us on the way. Dr. Hunt of the New Jersey Board fully expected to come but was prevented by an outbreak of typhoid somewhere in his bailiwick." After describing the accommodations, surroundings, etc., and means of boarding vessels, Dr. Lee adds: "The vessels lie about four miles off in very rough water and decline to come inside the breakwater on account of the time which it takes. The only boat is a little yawl entirely unfit for heavy weather. There is space enough to put up temporary barracks here in case of emergency, and there is a government pier close by to which vessels could be brought. There are no arrangements for disinfecting cargoes or clothing.

"It is doubtful whether this would be the best place for a permanent quarantine station on account of the exposed situation and roughness of the water. Also, because, in case of storm, so many vessels take refuge here, often close together. The distance from the city is also a possible objection.[?] I think there must be an island higher up the bay somewhere, which could be utilized for the purpose."

*Delaware.*—Quarantine along the Delaware coast is limited to the local regulations of the coasting trade. There is a government quarantine station at the Delaware breakwater, described in connection with the Pennsylvania quarantine system.

*Maryland.*—On the 4th of August, accompanied by Dr. James A. Steuart, Health Commissioner, I made an inspection of the quarantine establishment at the port of Baltimore. This is situated at Little Hawkins of Leading Point, about seven miles from the city, on the Patapsco river. The grounds belonging to the station embrace about twenty-five acres, surrounded by improved farms. There is a new and well-arranged hospital building with accommodations for forty patients. Also a residence for the physician in charge, boatmen's house, stables, etc., all in good condition and neatly kept. The station is connected by telephone with the city. There is no provision for the care of those detained for observation after exposure upon an infected vessel. The hospital facilities may be increased by the use of tents in suitable weather, and in case of emergency the old quarantine establishment now used as a small-pox hospital might be utilized.

The quarantine season extends from May 1 to October 31, and during this period an assistant resident physician is on duty at the station. All foreign vessels bringing passengers are required to stop for examination throughout the year. No attention is paid to the vaccinal protection of immigrants, unless small-pox is discovered on a vessel, and owing to this neglect repeated introductions of the disease into the interior have occurred through this port. Vessels are boarded in the harbor from a steam tug kept in constant readiness for that purpose. The depth of water at the quarantine anchorage is about twenty-two feet at low tide, and there is plenty of room to anchor vessels out of the track of commerce. There are no facilities as yet provided for the discharge and disinfection of cargo from an infected vessel, but additional facilities and proper appliances for disinfection are contemplated.

As a further precaution in the present emergency, I suggested the advisability of requiring vessels to submit to inspection by the government service at Cape Charles.

*Virginia.*—Dr. James D. Galt, the Quarantine Medical officer of the Elizabeth river district, has furnished the following from Norfolk, under date October 20, 1885:

"In reply to your inquiries as made in letter No. 20,519, I would briefly state that the quarantine facilities of this port are ample. Situated on the Elizabeth river, itself an estuary of Hampton Roads, there is all the sea room necessary for an efficient quarantine. The quarantine station is abreast of Carey Island, five miles below the city, where the river rapidly widens into Hampton Roads. Vessels

are invariably examined at the station, and are absolutely prohibited from coming up until inspected by the quarantine officers.

"There is nothing special about our method of disinfecting vessels, cargoes and the crew. The fumes of burning sulphur are usually employed. Sometimes, in the case of large sized vessels, chlorine, generated by the action of sulphuric acid upon common salt, is also employed below the water line. Vessels in quarantine are anchored at a safe distance outside the mainship channel.

"So far I have had no cholera-infected vessels to inspect. Should any such arrive, I would treat them on the same general principles of disinfection as other vessels, giving special attention to the thorough disinfection, or destruction, if necessary, of all clothing, bedding, rags, or any other materials which might act as fomites for the infection."

In response to a subsequent inquiry, asking what assistance or protection has been afforded by the quarantine or inspection maintained by the National Government through the marine hospital and revenue marine services, Dr. Galt writes that "while it does not relieve me from responsibility as the local quarantine officer, it is undoubtedly an additional protection to this city, and I would compare it in military phrase to a second line of entrenchments around us. This service is, as you know, maintained only during the warmer months, and was raised on the 10th inst. [Nov.] for the winter, so that I am now without its assistance.

Subsequently, December 31, the following information was furnished, through Dr. Galt, by Dr. F. M. Urquhart, of the marine hospital service. "The service has two quarantine steamers, the *Woodworth* and *Manhattan*, which are used for inspecting vessels. If any vessel is found infected it is carried to Fisherman's Island and quarantined, and the sick placed in hospital on the island. The hospital was built during the summer of 1884, and contains about twenty beds.

"Fisherman's Island is just off Cape Charles. A keeper and assistant remain at the hospital at all times, and extra help is employed in case of sickness. Two surgeons of the marine hospital service are detailed for the summer season (May to December), the one in charge, the other as assistant. The vessels inspected are all foreign vessels and vessels from the southern ports of the United States. Every vessel is thoroughly inspected (each man inspected and cargo examined). If vessel is found infected, cargo is transferred to lighters and thoroughly disinfected (or thrown overboard), and vessel thoroughly cleansed, disinfected and detained in quarantine for a certain length of time."

*North Carolina.*—There are four ports of entry on the North Carolina coast, all having good and spacious harbors, namely: Edenton, Beaufort, Newberne and Wilmington. Of these the port of Wil-

mington is the only one of importance for quarantine purposes. Dr Thomas F. Wood, secretary of the North Carolina State Board of Health, writes as follows concerning quarantine at this port :

"In reply to your letter of inquiry No. 20,513, I would say: Our quarantine facilities are inadequate. The quarantine station is at the mouth of Cape Fear river, twenty miles from Wilmington. At this station certain vessels are required to proceed at once to the station for inspection. The quarantine officer is appointed by the Governor. He lives at the station and has immediate charge of all the details of disinfection, cleansing, unloading and police direction of the detainees.

"In all cases of doubt he submits his case to the advisory quarantine board, two gentlemen, selected by the President of the State Board of Health, who reside in Wilmington. Each vessel is treated upon its individual merits, and the rules are made elastic enough to apply to each case.

"Our means of disinfection are primitive. The vessel is unloaded, bilge is pumped out and fresh water pumped in until it is discharged clear and odorless, and the disinfection is completed by burning sulphur under closed hatches. The vessels are unusually small, and come in ballast, and as they are not numerous there is little difficulty in performing satisfactory cleansing. When there is doubt, the vessel is required to load at the station, the cargo being carried to it in lighters.

"Should a vessel put in with cholera on board, we would relieve the necessities and have her towed to Sapelo Station. If her crew was small we would keep her under observation, and treat the men on board. The quarantine hospital was burned two years ago, and the State has not rebuilt it."

Dr. Wood encloses a printed copy of the quarantine regulations, but as these are sufficiently summarized in his letter they are omitted from this report.

*South Carolina* —The quarantine system of South Carolina is governed by the provisions of a State law, approved December 20, 1881, entitled "An act to render more efficient the quarantine service of the several ports of the State." Under this enactment the administration of quarantine at the port of Charleston is placed in charge of the board of health of the city, subject to the advice and supervision of the executive committee of the State Board of Health. At the other ports of the State quarantine remains under the supervision and control of this latter body, and the stations at Georgetown, on South Island, at St. Helena, entrance on Buzzard's Island, and at Port Royal, on Paris Island, have received special attention since the danger of cholera importation became imminent. Many of the buildings have been repaired, and new ones have been erected on the site purchased last year on Buzzard's Island.

The following regulations—which are uniform with those in force at the Georgia quarantine stations, so far as relates to foreign vessels—govern the quarantines of South Carolina:

I. On and after the opening each year of the National Quarantine station (Sapelo Sound), all vessels from infected or suspected latitudes arriving with sickness on board, or having had same during voyage, must be directed by the pilot to proceed to said National Quarantine station.

II. Any vessel arriving at this port bearing the certificate of the National Quarantine officer, must be brought to anchor at the quarantine station, and there remain until released by the order of the board of health.

III. During the closure of said National Quarantine station, all vessels such as above described, must anchor at the port quarantine station, under personal direction of the quarantine officer.

IV. Vessels from any foreign port direct, or via American ports, with or without sickness on board will, during the entire year, be compelled to anchor and remain at the quarantine station until released by written permit of the quarantine officer.

V. All vessels arriving at this port with sickness on board, or having had same during voyage, will, at all seasons of the year, no matter from what port, either American or foreign, anchor at the quarantine station, and there remain until released by order of the board of health.

VI. Vessels from infected or suspected latitudes, will, during the entire year, be required to discharge any and all ballast at the quarantine station, or such other place as may be designated by the health authorities, in the harbor under water; to have bilges and limbers cleansed and sweetened, and from May 1st to November 1st of each year, be subjected to at least two fumigations and such other disinfection as may be necessary, and be detained at least fifteen days.

VII. On and after May 1st, and until November 1st of each year, and longer if the board of health so determine, all coastwise vessels or steamers from latitudes south of Cape Hatteras, other than those by inland route, must anchor at the quarantine station. Steamers and vessels from non-infected or non-suspected ports, will not be detained longer than necessary for the quarantine officer to satisfy himself of their perfect sanitary condition. Vessels from infected or suspected latitudes will have to comply with section VI, be fumigated at least twice and detained at least fifteen days.

VIII. Coastwise steamers and vessels arriving at this port by inland route, from latitudes south of Cape Hatteras, between May 1st and November 1st, and later, if the board of health so determine, must be inspected and given permit by the quarantine officer before the landing of either passengers or freight.



IX. From May 1st to November 1st of each year, no vessel from an infected or suspected latitude will be allowed to either lighter or bring cargo of fruit up to the city.

X. Pilots must, in each case, before boarding, make inquiry as to the sanitary condition of vessels; in no case must they board if the vessel has sickness on board, or has had same during voyage; in such cases they must either direct to Sapelo Quarantine station, lead the vessel in, or have their small boat hoisted alongside, clear of the water, and in this way pilot the vessel in.

Dr. H. B. Horlbeck, city registrar and secretary of the Charleston board of health, furnishes the following information concerning the station at the port of Charleston:

The station at Fort Johnson, on James Island, is about two miles east from Charleston in the harbor. The buildings comprise a fever-hospital and pest-house, offices, etc. There is a fine and commodious wharf, also boats for boarding purposes, under care of a quarantine officer, and a guard boat. Service is maintained from May 1st to November 1st every year, to prevent unauthorized communication with the station. This service is also continued from November to May when necessary: Vessels are inspected at the station in the stream. They are fumigated with sulphurous-acid gas, and disinfected with the bi-chloride-of mercury solution. Cargoes of fruit from infected ports are not permitted to go to the city from May 1st to November 1st, and certainly no other cargo until it has been taken out of the ship at the station and fumigated (see quarantine regulations). Vessels arriving pass within a few hundred yards of vessels detained at quarantine. No vessel from a cholera port is allowed to come in, but is ordered to Sapelo. Should a vessel have either cholera or yellow fever break out at quarantine it would be sent to Sapelo instant, or on the next tide—that is, certainly within twelve hours."

*Georgia.*—Dr. J. T. McFarland, health officer of Savannah, furnishes the following in response to my letter:

"The quarantine station is located seaward of the city, distant between fourteen and fifteen miles, upon an oyster-bed shoal; this shoal is entirely surrounded by water and is covered about four feet in every flood tide. One short angle of the river channel runs within about three hundred yards of the station. All vessels from infected or suspected parts and latitudes are required to discharge ballast all the year round at this quarantine station. No ballast from the West Indies, or suspected localities north of Rio de Janeiro, has been allowed to be brought to the city of Savannah since 1876. This regulation was instituted as a guard against yellow fever introduction.

"The facilities of the station are not as great as are required; an increase of wharfage and the erection of a storehouse are needed.

"All vessels are inspected at the quarantine station by the resident physician. Vessels in cargo, from foreign ports, seldom come to this port between May 1 and November 1. I believe this is the case at the other South Atlantic ports. During this season but one vessel in cargo (guano) has arrived here. Coffee vessels have been in the habit of coming to this port, and have been required to undergo sulphur fumigation with cargo in place; the fumes of the gas do not injure the quality of the bean in the slightest degree. The cargo is then allowed to be taken by lighters to the city, while the vessel is detained at the station; her bilges and timbers are cleansed and disinfected with solution of sulphate of iron or bichloride of mercury, and, along with all clothing and bedding, she is then subjected to a second fumigation. The requirements having been carried out, and no sickness having occurred on board during detention time, permit is granted by the health officer for vessel to come to the city. The clothing on board any such vessel is subjected daily, during detention, to the action of fresh air, all bedding and clothing being exposed on dock of vessel and in some cases these are subjected to boiling. Fumigation with chlorine gas is frequently resorted to—always when there is any suspicion of small-pox infection.

"So soon as cholera became epidemic in Spain this past summer, orders were issued to the pilots of this port, not to board, but to direct to the Sapelo quarantine station, any and all vessels arriving from ports infected with cholera. This National quarantine station is distant only about sixty miles from the mouth of the Savannah river. Recently orders have been issued allowing pilots to lead to the port quarantine station any vessel from the Mediterranean coast, when such vessel has not had death or acknowledged infectious disease aboard during her voyage. This change of order was made in consequence of the decrease of cholera in Europe. These vessels were ordered to the National quarantine station because they were all deemed entitled to thorough cleansing, and the health authorities of Savannah decided that if cholera did make its appearance on board any of them while having the clothing, bedding, etc., attended to, it would be decidedly preferable to have them away from this port. Vessels arriving at this port from yellow fever latitudes are not boarded by the pilots. Such vessels are led into quarantine grounds if they have not had sickness on board during voyage. If they have had sickness on board during voyage, which the captain acknowledges to have been suspicious, he is directed to the Sapelo station. If any vessel arrives at the port quarantine station and it is determined after investigation that she has had infectious or contagious disease on board, she is immediately ordered to leave the port, and is directed to the National quarantine station. This refuge is unquestionably a very great safeguard and help to this portion of the Atlantic coast, and in helping and protecting us it protects the country at large.

"Should a vessel arrive at this port with cholera on board, and the National quarantine station be closed, the ship would be placed at the greatest distance from line of travel (say three-fourths of a mile) and guard boats, with most reliable crews, would prevent any communication with or from her, excepting the quarantine physician, who would have to remain and look after the sick. Telegraphic communication would be opened at once with the authorities at Washington, asking the immediate opening of the National quarantine station. If such station was opened the vessel would be sent there. If it was not opened the health authorities of Savannah would have to assume the responsibility and do the best in their power to prevent the spread of the disease.

"In closing I cannot refrain from an expression of condemnation and protest against the unreliability of the ordinary bills of health issued by some consuls of the United States. They are worse than useless,—they are dangerous. It is a frequent occurrence that clean bills of health are issued by them at ports where deadly epidemic diseases are prevailing. There should be some remedy for such pernicious and questionable conduct. Again, I know positively that steamships, from districts of Spain affected terribly with cholera, have been admitted into one of the largest ports of the United States, during this season, without the slightest attempt at fumigation of the clothing of seamen, or cleansing of vessels, the statement being made to me in official correspondence, that as no sickness had occurred during the voyage it was deemed unnecessary to use any precautions, and that this would be the line of action pursued in the future at that port."

Dr. Jas. S. Blain, health officer of Brunswick, answers :

1. The quarantine facilities of Brunswick are not so perfect as I would like to have them; but they have proven sufficient to protect this city from all epidemic infectious and contagious diseases since the yellow fever epidemic of 1876.

2. I inspect all vessels at a distance from four to ten miles from the city. All vessels are inspected before permission is granted to proceed to the city.

3. Vessels are purified and disinfected, first by the discharge of all ballast or cargo; secondly, the planking along the keelson is taken up, all the filth collected in the limbers of the vessel taken out, and the vessel thoroughly washed and pumped out, salt water being used until the vessel is perfectly clean; thirdly, a strong solution of carbolic acid and sulphate of iron is applied to the whole interior, and the vessel is then fumigated by burning from 100 to 300 pounds of sulphur in the cabin, fore-castle and hold of the vessel. All bedding and clothing of the crew is subjected to cleansing and disinfection. All infected or suspected vessels are detained ten days after cleansing, then, if no case of disease appears, the vessel receives a permit to proceed to the city.

4. The quarantine station is four miles from the city; it is not out of the line of travel, but no intercourse with vessels in quarantine is permitted.

5. All vessels with sickness on board, and all vessels from cholera-infected or suspected ports whether or not having sickness on board, are sent to Sapelo Sound. All pilots and steam tugs on this bar have permanent instructions to order all vessels with sickness on board or from cholera-infected ports to Sapelo Sound. Pilots are not permitted to board such a vessel, but are instructed to direct or conduct them to Sapelo Sound. After discharge from the National quarantine station, all vessels are again inspected at this quarantine station before receiving a permit to proceed to the city.

*Florida.*—Notwithstanding its extended coast of nearly 1,200 miles, Florida has few harbors inviting foreign commerce, and except Fernandina and Pensacola, the relations of its seven ports of entry to the interior are limited. A State enactment approved February 16, 1885, provides for the appointment of county boards of health which are clothed with full power to act in regard to all matters pertaining to quarantine, to appoint a port inspector and other officers, to declare and establish quarantine and provide rules and regulations for its enforcement, and “after the establishment of any quarantine against any port or place any person violating the same shall be deemed guilty of a felony, and upon conviction thereof, shall be punished by a fine of not more than five hundred dollars, or by imprisonment in the State penitentiary not more than one year.”

Under this law the quarantine of the port of Pensacola is now administered by the Escambia County Board of Health. The station is on Santa Rosa Island about nine miles from the port, and is described by the quarantine physician, Dr. White, in reply to my inquiries addressed to Dr R. B. S. Hargis, as being supplied with “all the buildings necessary for quarantine purposes. Vessels are inspected at the station. Vessels detained are required to discharge all ballast, and after discharge of ballast, the vessel is thoroughly cleansed and washed in all its parts, then fumigated, using twelve pounds of sulphur to every one hundred tons registered, the fumigation lasting twelve hours. After fumigation, a saturated solution of copperas is poured through the air-streaks, between each timber, running down to bilge; lime water (whitewash) used in same manner. The entire hold is then whitewashed, lime put in blige to the forecastle, with bedding, clothing, etc., under the same process of cleansing, fumigation, etc., the cabin receiving same attention.

“It is not probable that a vessel with cholera on board will arrive at this station, as all vessels arriving outside the entrance of the port upon which any contagious, infectious or pestilential disease occurred during the voyage are sent to Ship Island, the pilot coöperating

with the local authorities in directing them to that station. Should, however, a vessel get to this station with cholera on board, and in such a condition that she could not be sent to Ship Island, the sick would, if possible, be cared for in hospital, and the vessel put in best sanitary condition, and such bedding, clothing, etc., as could not be disinfected would be destroyed."

Dr. Alexander, port physician at St. Augustine, writes that the quarantine flag for that port "stands about one and three-fourths miles from the city, where all vessels from a distance are inspected. Coasting vessels, or those plying between this and near ports, are allowed to come to the wharf for inspection, provided there is no sickness on board; if there is, then they share the quarantine ground as all others. Even upon coming to the wharf, no communication is allowed until inspected. Our pilots are required to learn from the captain, before boarding a vessel, whether she is from a suspected port, or has on board a suspected case. In the first case, she is brought with as little contact as possible inside the harbor, there anchored and report made to port physician and board of health. If sickness is on board, she is directed to proceed directly to Sapelo Sound refuge station without boarding or entering harbor here.

"Should necessity demand the treatment of a vessel, we would use the disinfectants recommended by the National Board of Health and adopted generally, viz: sulphur, sulphate of iron, carbolic acid, etc., subjecting cargo, clothing, bed-clothes, etc., to the same, and burn what might endanger after-disinfection.

"A vessel entering with contagious disease would not be allowed to remain one hour, as the condition of our harbor would subject the whole city to immediate infection; even should a vessel coming from foreign ports be in perfect health and condition, she must stop at quarantine ground, and all circumstances connected with her trip be well considered by the board of health before allowing her to come up.

"The coast map will show our unfortunate position as far as receiving or entertaining a vessel with disease on board. Our proximity to the high seas, the short and extremely narrow inlet, could but endanger us under the most favorable circumstances, as the small craft or pleasure boat would pass less than one hundred yards from the anchorage."

No responses have been received to repeated requests for information from Key West and elsewhere.

*Alabama.*—The coast quarantine of Alabama is limited to one port of entry—Mobile, and concerning this, Dr. Jerome Cochran, the State Health Officer, has kindly furnished, in response to my questions, the following succinct replies, which fully cover all the important points:

1. The Mobile quarantine station is chiefly an inspection station, but has the ordinary appliances of disinfection.

2. The entrance from the Gulf of Mexico into the Bay of Mobile is

thirty (30) miles from the city, and vessels are boarded for inspection at this entrance.

3. Vessels from infected ports with no sickness on board are disinfected anyhow before they are allowed to approach the wharfs.

4. Vessels with any infectious sickness on board, or having had any cases during the voyage, are sent at once to Ship Island. Such vessels are not allowed to enter the Bay at all until released from quarantine by the Ship Island officials.

5. Mobile is thoroughly in earnest about her quarantines, and no infectious disease has been introduced through the quarantine into the city since the war. Such outbreaks as we have had have been the result of infection brought overland from New Orleans.

6. Any vessel having on board at the time of its arrival, or having had on board at any time during the voyage, yellow fever or cholera, would be sent to Ship Island at once, and not allowed to enter the bay at all until discharged from the station, and even then, if there was any suspicion that she still remained dangerous, she would be disinfected anew at our own station."

*Mississippi.*—The county boards of health of Hancock, Harrison and Jackson counties control the maritime quarantine of Mississippi. There is no direct foreign commerce, but Bay St. Louis has a large coasting trade with Mobile and New Orleans, and acquires some quarantine importance in consequence.

*Louisiana.*—The quarantine system of Louisiana is under the control of the State Board of Health, which is authorized by various acts of the State Legislature to fix the duration of quarantine and to make and enforce all necessary regulations, to contract for building, employ persons, etc. At its discretion the Board may at any time cause the detention at the quarantine stations for disinfection, fumigation and purification, of any or all vessels from ports in which yellow fever usually prevails, or from ports where other contagious or infectious disease is reported to exist. Quarantine stations are established by law on the Mississippi river not less than 70 miles below New Orleans, at the Rigolettes—the entrance to Lake Pontchartrain—and below Morgan City on the Atchafalaya. But the State Board is also empowered to establish additional stations upon any of the approaches to the city of New Orleans in its discretion.

Under this latter authority the present Board has recently established a refuge station in Pas a L'Outre, some 28 miles below the original station, which latter is on the right bank of the Mississippi, 75 miles below New Orleans. A boarding station is also maintained at Eadsport at the head of the jetties.

Accompanied by Dr. Joseph Holt, President of the State Board, and to whose indefatigable energy the recent practical improvements are mainly due, I made a personal inspection of the Mississippi river sta-

tions on the 15th, 16th and 17th of July last, and witnessed the inspection of vessels, the disinfection and treatment of an arrival from an infected port—a 2,000 ton iron steamer; inspected another which had been treated two days before my arrival, and was not yet released; examined the appliances for disinfection, etc., and the buildings, hospitals, warehouse and other items of the quarantine plant. I am, therefore, enabled to endorse from personal observation the claim made that this is the most thorough and vigorous system of sanitary quarantine which has ever been enforced for the protection of a port from the introduction of foreign contagion into this country—if not in the world.

Beginning with the arrival of a vessel in soundings she is met by the pilot, who coöperates with the quarantine authorities and is frequently accompanied by the medical officer from the boarding and inspection station at Eadsport. This officer examines the ship's log and receives a sworn statement from the captain as to the sanitary history of his vessel and her voyage, beginning at the port of departure. All on board are mustered and carefully examined for cases of suspicious sickness. If the vessel be found in good sanitary condition and free from infection she is allowed to proceed up the river, but reports at the upper quarantine station for a second inspection. If from a non-infected port, she is now given free pratique and proceeds to the city. If from an infected or scheduled port, or if any suspicious development has occurred in the interim after first inspection, she is either subjected to treatment at the upper station or sent below to the refuge station, as the circumstances demand. For example: A short time before my visit a Mexican steamer had arrived; she was inspected at the boarding station and all hands mustered and examined as usual, without detecting any suspicious illness. After she had been allowed to depart the pilot reported that a sick man had been roused from his berth to be mustered with the crew. The fact was at once telegraphed to the upper station, and on the arrival of the vessel the man was found to be suffering with what proved to be yellow fever. The vessel with the sick man on board was at once sent down to the refuge station for necessary treatment, entirely out of the track of commerce.

If a vessel on first inspection be found infected she is not allowed to proceed up the river, but is at once sent to the refuge station, the sick are removed to the hospital, and the vessel is treated as hereafter described. After being thoroughly cleansed and disinfected, she is then sent to the upper station, where the compromised passengers and crew are subjected to a quarantine of observation during the usual period of incubation—depending upon the character of the disease. For the accommodation of these the large government warehouse is utilized. Meanwhile, the vessel may be allowed to proceed to the city in charge of an acclimated crew, or her cargo may be sent up on lighters—at the discretion of the quarantine authorities.

There is one medical officer on duty at the boarding station, one at the refuge station, and two at the upper quarantine—together with the necessary guards, boatmen, stevedores, nurses and other employés. All the stations are in telegraphic communication with each other and with the office of the State Board in New Orleans.

The following extracts from recent letters of Dr. Holt, written me since my visit, sufficiently explain the other details of the present quarantine administration for the protection of the Gulf gateway to the Mississippi valley. Improvements in minor points have since been made, and others will undoubtedly follow as experience demands their necessity. Under date of September 8th Dr. Holt writes:

The system comprehends two stations. The Lower Station, for the reception of infected vessels only, is situated at Pas a L'Outre, an unused outlet of the Mississippi. The isolation of this place is complete, while affording anchorage to vessels of any tonnage. As soon as a vessel arrives in this station the sick are removed to the hospital, where every provision is made for their proper entertainment and treatment. Preparatory to the disinfection of a vessel, persons are removed ashore and detained there until this process is thoroughly accomplished.

Pending the construction of a receiving wharf and warehouse, the freight, when the requirements of disinfection make it necessary, is discharged into barges, and every part of the vessel is then subjected to thorough treatment. This consists in cleansing of the bilge, and flooding it with bichloride of mercury in solution, one part to one thousand of water. All surfaces within the hold or below decks are freely wetted with the same solution applied as a spray from a large watering rose, similar to those used in garden watering-pots, supplied through a two-inch hose, from an elevated tank on the wharf, or from a tank by means of a powerful hand-pump aboard the quarantine tug-boat. The freight in the barge or after its return aboard ship, is subjected to the protracted action of concentrated sulphurous-acid gas.

This is applied in the following manner: Aboard the tug there is a compact battery of twelve furnaces for the rapid combustion of sulphur in large quantity. The furnaces measure each 3 feet 6 inches in length by 12 inches broad and 7 inches in height, and contain, each, a cast-iron pan 3 feet long, 1 foot wide and 2 inches deep. These furnaces open into a large reservoir, to which is connected a driving or exhaust fan capable of displacing about six thousand cubic feet of air per minute. It is driven by an engine which derives its steam from the tug boilers. The sulphurous fumes are conveyed to the close barge or into the hold of a ship through a tube of galvanized iron, joined in the manner of a stove pipe, twelve inches in diameter, and of a length necessary to reach any part of the ship required. We have now substituted for this a hose of asbestos cloth. The vessel is detained at



this station until there is every assurance of her being no longer infected.

The Upper Quarantine Station, situated on the left bank of the Mississippi, thirty miles above its outlets, is the regular station at which all vessels en route to the city are required to stop and undergo inspection. Those hailing from inter-tropical, American and West Indian ports, and from all the ports of France, and from the Mediterranean, are subjected to the process of disinfection with the mercuric solution and the sulphurous fumes described. Every article of ship's bedding, etc., sailor's luggage, clothing and baggage of officers and passengers is taken ashore, where, on the wharf, it is wetted with the disinfectant solution.

Not having as yet satisfactorily completed our drying chambers this part of the process is still inconvenient. It is desirable that all of these articles should be dried out and returned aboard ship as early as possible. In the meantime the vessel has been treated by the disinfectant wetting in every part and every particle of the atmosphere heretofore contained in her has been displaced by the sulphurous-acid gas.

Vessels, together with their cargoes, officers, passengers and crew, coming from ports infected with yellow fever, are compelled to remain in quarantine a period of five days from moment of arrival, for observation, in order to give a reasonable assurance against the presence of the disease in its incubatory stages.

"The entire treatment of a vessel to prevent the introduction of cholera, yellow fever or small-pox is so exacting and so rigorous as to occasion no little grumbling on the part of those who must undergo it. This is particularly the case with officers and others aboard Mexican, Spanish and Italian vessels. These persons resent any effort at sanitary treatment as a personal affront while, in fact, they most require it. They are utterly without feeling and indifferent as to whether they convey to our port cholera, yellow fever or the plague. The Americans, English, French and Germans are reasonable in this matter. I mention this as a simple matter of experience in regard to nationalities, as we have to deal with them in quarantine.

"Our quarantine methods represent the introduction of a system of maritime sanitation which has already suggested many particulars of improvement, and has opened to our view a broad field of sanitary enterprise far wider in its possibilities of good—first in giving the highest attainable quarantine against the introduction of pestilential diseases, and, secondly, in removing foolish and untrustworthy restriction, destructive of international commerce and travel. We have demonstrated by practical experience that the entire plan of treating ships in quarantine, or maritime sanitation, can be operated at a very moderate cost in ports doing a small business in shipping."

The following passages from the letter referred to are of special interest :

In using the bi-chloride of mercury, we know that we have one of the most powerful of all the germicidal agents. Practical test in municipal disinfection and in quarantine has demonstrated its absolute freedom from injury to those having to do with it. In the operation of maritime sanitation, our employes have been wet with the solution from head to heels and for hours at a time, without having as yet shown the slightest evidence of mercurialization. The clothing and other baggage of passengers and crew have been soaked in it without the slightest injury to persons or fabrics. Injury to the latter has always been due to the water and not to the chemical. The decks, cabins, bunks and every available part of the vessels have been freely drenched with the solution without injury.

The sulphurous-acid gas, used as the displacing agent of the atmosphere below deck, has long since proved itself the most reliable gaseous disinfectant and the least injurious to cargo of any yet tried. As applied in our quarantine, it is like turning loose a volcano into the hold of a ship, The amount of sulphur used on any one vessel varies from one hundred and fifty to nearly three hundred pounds, so applied as to displace with immense force every particle of air contained in the bilge, between the planking, or skin, and ceiling, in all parts of the cargo and dunnage. So searching are these fumes under the operation of the law of the diffusion of gases, favored by high pressure and rapid motion of currents, that a bowl of rain water, buried in the heart of a cargo of coffee, seventy-five feet distant from the conveying hose, was found distinctly impregnated with sulphurous acid. The effect upon the coffee itself, when dry and in good condition, was not observable. By getting the hose well into the dunnage, we can now treat a cargo of coffee with a thoroughness never before contemplated, and without the extra expense to shippers or consignees of a dollar, as against from five hundred to eighteen hundred dollars in times past, when quarantine treatment involved discharging and reloading cargo, and the employment of a great gang of stevedores, barges, tugs, etc., and even then the disinfection was utterly worthless, as proven by the subsequent appearance of yellow fever on the ship in port. If recent observations on the destructive influence of mineral acids, even greatly diluted, on the cholera virus are true, then we have in this agent the most efficient adjunct to the mercuric solution.

As an instance of unexpected difficulties met with in practice, the amalgamating powers of the mercury salt on pumps, fittings of hose, nozzles, spray roses, etc., presented for awhile a most formidable difficulty, finally overcome in a simple and economical way. The rapidly destructive effect of the heated sulphurous-acid gas upon all

flexible hose of organic composition, compelled us to adopt the galvanized iron tubing, heavy and excessively awkward in use. This I have completely overcome by having had manufactured a close-woven, twilled or corduroyed asbestos cloth. While a perfect non-conductor of heat, this material is abundantly light, and is proof against acids or heat.

Under date of November 11, 1885, Dr. Holt writes: "In reply to your letter No. 20,867, I have the honor to state that we are maintaining a careful guard in the inspection of all vessels from Mediterranean ports. The process of bichloride disinfection is enforced, however perfect the health record and clean the bill of health, including a careful attention to bilge. The only modification in the full force of treatment is the omission of the atmospheric displacement by the sulphurous blast. This feature of our system was discontinued November 1st, the end of our regular quarantine season.

"We are rapidly constructing an immense heating chamber, supplied with a double steam coil from a twenty horse-power boiler. The builders (Chicago) insure the easy and speedy attainment of 250° F. This will be used in addition to the bi-chloride mercury wetting. Any vessel not giving proof of continued good health or, in other words, showing any ground for suspicion, will be remanded to the lower station, where she will be subjected to prolonged and vigorous treatment.

"The new system has paid out of itself every dollar of running expenses. We will open it in perfect working order as to every detail early in May next. We are fully impressed with the necessity of maintaining vigilance in regard to cholera."\*

*Texas.*—The quarantine system of Texas covers a coast line of some 500 miles, extending from the mouth of the Sabine at the Louisiana boundary to the mouth of the Rio Grande. Upon the recommendation of Dr. R. M. Swearingen, the State Health Officer, the law has recently been changed so as to relieve local boards of health of the responsibilities of this coast quarantine, and the Governor is authorized to appoint State quarantine officers, and has sole control of them in the enforcement of the quarantine laws. This change was inaugurated in the spring of 1883, and stations have since been established and equipped at the six ports of entry, as follows:

At Brazos de Santiago, near the mouth of the Rio Grande, and covering the port of Brownsville, the commercial gateway to the lower valley.

At Aransas Pass, covering the gulf entrance to Corpus Christi bay.

At Pass Cavallo, the entrance to Indianola.

At Velasco, at the mouth of the Brazos river.

On the east end of Galveston island, for the port of Galveston.

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\*Cholera was introduced into this country through this port in December, 1843, and in February, 1873.

At Sabine Pass, the terminus of the Texas Trunk railway.

Of these stations, that at Galveston is by far the most important, and its quarantine equipment is described by Dr. Swearingen as consisting of a steam tug fitted up with hot-air chambers and modern appliances for the disinfection of a vessel and cargo; a disinfecting warehouse with a capacity for treating 4,000 sacks of coffee at one time; and a station house—the whole plant representing an outlay of about \$55,000.

The station is on the east end of the island about two miles from the city. Vessels from suspected ports are inspected beyond the bar, ten or twelve miles south-east of the station, and are detained there, if considered dangerous, until the exact facts are determined. If actually infected, they are not permitted to cross the bar, but are ordered to the Ship Island refuge station. If from an infected or interdicted port, a quarantine of detention of twenty days is rigorously enforced, during which period the cargo may be removed by lighters to the disinfecting warehouse, and the vessel be suitably treated. From May 1st to the close of the quarantine season in November, 1884, 939 vessels were inspected at this station, and 17 of these were subjected to the 20 days' detention. All vessels are inspected coming from south of 25° north latitude, and the enforcement of the regulations results in a practical exclusion of vessels from Mexican, Cuban and Brazilian ports during the summer and fall.

Yellow fever is the disease most dreaded, and the quarantine system has been framed and heretofore administered with reference to its exclusion. The Mexican authorities have coöperated by establishing a quarantine at Bagdad in aid of the station at Brazos Santiago covering the lower mouth of the Rio Grande, and have adopted the same rules and regulations as those enforced at the Texas ports.

An inspection of transatlantic steamers with reference to cholera is now maintained at the six Texas stations and will be continued throughout the winter. As late as November 10th of this year there were several steamers from cholera infected ports on the Mediterranean detained in quarantine off Galveston. The vessels are not allowed to come to the wharf, but are unloaded and loaded again by lighters.

A communication from State Health Officer Swearingen to the Governor of the State, commenting upon the efforts to establish an international quarantine, incidentally but fully sets forth the principles upon which the Texas quarantine system is based.

“Another very material variance between the authorities of the State and those of Mexico, is the length of time thought to be necessary for vessels from infected places, or places liable to infection, to remain in quarantine before granting them free pratique. The Mexican Congress of Hygiene limits the period to ten days, for what

they are pleased to designate 'the rigorous quarantine,' while in Texas twenty days is the universal rule.

"If we had disinfecting warehouses at every port of entry, and steam tugs supplied with powerful exhaust fans that could drive out the impure air from the holds of ships, and immediately after force into every nook and crevice germicidal gases, the ten days' period of detention would probably be sufficient, but without these appliances of purification, a longer time unquestionably gives greater security.

"In making the above declaration, I do not lose sight of the fact that an infected vessel, without treatment of any kind, at the end of twenty, thirty or even sixty days quarantine, is possibly more dangerous than on the first day of arrival. The history of yellow fever gives abundant evidence that the poison does not retain its infectious quality for a long period when exposed to pure air, and that its proliferous properties are lost. The reverse is equally true. In warm, moist, impure air, its infectious quality seems to have no limitation, and of course such condition must favor its multiplication. With these facts conceded, the corollary is unavoidable, that the number of germs will increase when left undisturbed in the hold of a vessel, where all these favorable conditions are found. Without a warehouse for transferring goods, we cannot, in ten days, by opening every aperture for ventilation, by shifting cargo, pumping out bilge water, and the free use of germicidal gases, so disturb the condition of things as to pronounce the ship, crew and cargo innocuous.

"Again all persons are not equally susceptible to the poison of yellow fever, and the period of incubation does not usually commence the first day of exposure. If such was not the case every unacclimated person in an infected city would be down about the same time, and epidemics would be confined to a few days, instead of a few weeks. Assuming, then, that the cargo of a ship is infected, and that it will take ten days for the crew to discharge it, the probabilities are that with the majority of them the period of incubation would commence on the eighth, ninth or tenth day, instead of the first, second or third day, after the work of discharging had exposed them to infection. It follows, then, that a ten days' quarantine, when each day brings additional exposure to those who must handle the infected goods, offers every opportunity for the germs of yellow fever to be inoculated before the period of detention expires, and for the denouement to be made afterwards. \* \* \*

"Twenty days' quarantine for ships from interdicted places, ten for handling cargoes and ten more to give time for incubation, has been the rule so long governing the ports of Texas that it might be properly classed among the unwritten laws of the State. It is a conservative period, a kind of half way chronological station between the opponents of quarantine on the one side, and the advocates of total non-

intercourse on the other. Under that rule we have had no epidemic, nor have our commercial relations been seriously impaired by it. The guarantee given of freedom from infectious diseases more than compensates for the losses sustained by a policy that must necessarily divert certain currents of trade into other channels.

"The people of Texas, satisfied with the system under which they have prospered for so many years, will be unwilling to take new departures, until the etiology of yellow fever is more thoroughly comprehended, and science discovers more powerful agents for its destruction than we now possess. With due deference to the distinguished sanitarians who compose the Congress of Hygiene in our sister republic, we could not accept the ten days' period of detention 'as a base for any agreement that might be entered into.' " \* \* \* \*

Since the date of the letter from which the foregoing extracts are made (September, 1884), the "appliances for purification" have been furnished at the Galveston station. But Dr. Swearingen remarks in a recent letter to me, "although we have (at Galveston) every facility for inaugurating a quarantine more in harmony with the views of sanitarians, our people are not yet prepared for experiments."

As to land quarantines, Dr. Swearingen says: "Railways in Mexico make it possible for persons, freight, etc., to be transported from Vera Cruz to any city in Texas within five days, via El Paso or Laredo. Quarantine stations for the first time were this year established at those points. I have not attempted even an inspection service against small-pox in Mexico. It would be purely ornamental if I did so. The Rio Grande is a shallow stream, and from El Paso to Brownsville, by the river bed, is probably two thousand miles. Smuggling is carried on extensively, and the United States Government cannot prevent it. A quarantine officer at any point would only be a notice to these organized bands and to the travelers of both republics, that they would have to cross the river higher up or lower down, 'only this and nothing more.'

"I can enforce with some reason an embargo against persons from Vera Cruz when yellow fever prevails there, for that city is the only nidus of infection, but when small-pox is all over the country, the extreme folly of such a thing as an inspection at railway crossings, is too apparent to be discussed."

Should cholera be introduced into Mexico and become epidemic there, the same conditions would then obtain with reference to the exclusion of that contagion. Dr. Swearingen adds, however, that Texas "will coöperate with the authorities of other States, in any defensive action against cholera importation that may be indicated by the American Public Health Association."

*National Refuge Stations.*—There still remains to notice the Refuge Stations in Sapelo Sound—off the coast of Georgia—and on

Ship Island in Mississippi Sound. These were originally projected by the National Board of Health as part of a system intended for the protection of the minor ports, by providing fully equipped establishments for the care and treatment of infected vessels. Only the Ship Island station was completed on an adequate scale, and its chief importance as a safeguard to the Mississippi river and the port of New Orleans has been largely superseded by the establishment of a refuge station in Pas a L'Outre by the Louisiana State Board of Health.

These stations, Sapelo Sound and Ship Island, are now in charge of the Marine Hospital service, together with those in Hampton Roads and at the Delaware Breakwater, already described.

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**E. PROCEEDINGS OF THE NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH AT THE THIRD ANNUAL MEETING HELD AT TORONTO, CANADA, OCTOBER 4, 1886.**

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The third annual meeting of the conference of State Boards of Health was held in the parlors of the Queen's Hotel, Toronto, Ont., October 4, 1886. The meeting was called to order by Dr. G. P. Conn, secretary. The president, Dr. J. N. McCormack, not being present, Dr. H. B. Baker, of Michigan, was chosen president *pro tem*.

The minutes of the last meeting were read and accepted.

Dr. William Oldright, chairman of the local sub-committee, was introduced and in a very happy manner welcomed the members to the city. He hoped if anything that would be conducive to their enjoyment while in the city had been left undone that they might be reminded of it.

Dr. H. P. Walcott, president State Board of Health of Massachusetts, suggested the roll-call of States, which was as follows:

Alabama, ———; Arkansas, ———; California, Dr. H. S. Orme; Colorado, ———; Connecticut, Dr. C. A. Lindsley, Dr. R. S. Goodwin; Delaware, ———; Florida, ———; Georgia, ———; Illinois, Dr. John H. Rauch; Indiana, Dr. Charles N. Metcalf, Dr. James F. Hibberd; Iowa, Dr. J. F. Kennedy; Kentucky, Dr. J. N. McCormack; Louisiana, Dr. Joseph Holt, Dr. L. F. Salomon; Maine, E. C. Jordan, C. E., Dr. F. H. Gerrish; Maryland, Dr. John Morris; Massachusetts, Dr. H. P. Walcott, Dr. S. W. Abbott, Dr. E. U. Jones; Michigan, Dr. J. H. Kellogg, Dr. H. B. Baker; Minnesota, Dr. Charles N. Hewitt; Mississippi, ———; Missouri, ———; New Hampshire, Dr. G. P. Conn, Dr. Irving A. Watson; New Jersey, Dr. Ezra M. Hunt; New York, Dr. Alfred Mercer; North Carolina, ———; Ohio, Dr. D. H. Beckwith, Dr. C. O. Probst, Dr. W. H. Cretcher; Pennsylvania, Dr. E. W. Germer, Dr. Benj. Lee, Dr. David Engleman; Rhode Island, Dr. Charles H. Fisher; South Carolina, Dr. J. R. Bratton; Tennessee, Dr. J. Ber-

rien Lindsley, Dr. G. B. Thornton, Colonel D. P. Hadden, Dr. J. D. Plunkett; Texas, ———; Virginia, ———; Vermont, ———; West Virginia, ———; Wisconsin, Dr. J. T. Reeve; District of Columbia, ———; Dominion of Canada, Dr. F. Montizambert, Dr. W. S. Harding; Province of Ontario, Dr. C. W. Covernton, Dr. William Oldright, Dr. P. H. Bryce, Dr. J. J. Cassidy; Province of Quebec, F. N. Boxer, C. E.; Manitoba, Dr. Wm. R. D. Sutherland.

It was moved and adopted that papers be limited to twenty minutes and discussions to ten minutes.

Mr. E. C. Jordan, C. E., member State Board of Health of Maine, read the following paper by Dr. A. G. Young. He stated that the proper title of the paper was "A Comparative View of Sanitary Laws :"

#### **A Comparative View of Sanitary Laws, and what Changes are Needed in those of Maine.**

An examination of the public health laws of the various English-speaking people shows unmistakably in many directions the molding influence of the few earlier models of this kind of legislation. It shows also, among the laws, many points of difference and various degrees of excellence. A law has been defined by some of our jurists as the expression of a want. These wants, which have found utterance in the language of our statute books, it is quite conceivable, have not been found to be the same over the whole length and breadth of the many degrees of longitude and latitude. As the want has differed, so shall we find the expression of the want to be dissimilar. But more frequently, undoubtedly, the dissimilarity in our sanitary enactments has been due to other causes; to the slighter or more careful study which the makers of legislative bills have given to the needs of the State; to the differences in composition of Legislatures as far as intelligence regarding sanitary matters is concerned; to the more or less advanced state of preparedness of the general public for improved sanitary laws, and often, undoubtedly, to the correct or incorrect appreciation of the state of the public mind by makers of bills or legislative enactors of them.

In a few of our States there has lately been an attempt to codify and improve the scattered enactments and to make the laws more in conformity with the clearly-felt needs of modern sanitation, and some of these it is a pleasure to read.

But in most of our States the existing legislation is well characterized by the expression, "tumbled up;" it has been done piecemeal, and in almost all directions there is a reverential clinging to antiquated forms, which in this age, for effectiveness and utility, are as much out of place as is the wooden plow of our Aztec neighbor.

In my own State, which was originally a part of Massachusetts, the

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public health laws were copied almost without change from those of the mother State. For instance, almost everything which we have relative to the important matter of the management of the contagious diseases we got from an act approved March 10, 1821, entitled, "An Act to prevent the spreading of the small-pox and other contagious diseases." This was copied without change from the Massachusetts law of that time, and this Massachusetts law was passed by the General Court of the Commonwealth June 22, 1797.

Furthermore, a large part of this Massachusetts law was a transcript of the old Colonial law. In an act passed one hundred and eighty-five years ago, in the reign of William IV., we read :

"SEC. 3. That, if need so require, any two justices of the peace may make out a warrant, directed to the sheriff of the county or his deputy, or constables of the town or place where any such sick person or persons shall be, requiring them or any of them, in His Majesty's name, with the advice and direction of the selectmen of the same, to impress and take up convenient housing, lodging, nurses, tendance and other necessities for the accommodation, safety and relief of the sick."

This venerable law, handed down from the early colonial times to the newly-erected Commonwealth, and by her in latter years bestowed as a part of the legal dowry of our own State, where it remains intact, is a fitting testimonial of the sterling good sense possessed by our early legislators, and may be deemed a reflex of the sanitary knowledge and of the methods in those times of dealing with contagious diseases and the question of quarantine ; but standing, as it now does, without amendment and without change, save to be shorn of its antiquated phraseology, it is a sorry index of the needs of this latter half of the current century, and a very inefficient piece of legal machinery for dealing with many of the sanitary problems as they now present themselves to us.

In the following very incomplete comparative view of the health laws of some of our States, together with those of England and the Province of Ontario, the presentation will mostly be made under four separate heads, viz :

State Boards of Health,  
Local Boards of Health,  
Nuisances, and  
Contagious Diseases.

#### STATE BOARDS OF HEALTH.

A marked difference exists in various State or central boards of health in regard to their powers and duties. The role of some of them, as defined by the legislative acts establishing them, would appear to be hardly more than educational and advisory. Examples of such boards with restricted executive powers are those of Maine, Rhode Island, Connecticut, Indiana and Michigan. Some of these,

notwithstanding their limited jurisdiction, have done excellent sanitary work.

To other boards their Legislatures have delegated a certain share of law-making power, thereby, under certain circumstances, or in certain emergencies, increasing their effectiveness and usefulness. The law of Illinois defining the powers of the board says that it "shall have authority to make such rules and regulations and such sanitary investigations as they may, from time to time, deem necessary for the preservation or improvement of public health; and it shall be the duty of all public officers, sheriffs, constables and all other officers and employes of the State, to enforce such rules and regulations."

"Under this section," says the Attorney-General," broad duties devolve upon the State Board of Health, and ample power is given to enable them to discharge their duties. They not only have the right, but it is their duty, to make any and all rules and regulations which they deem necessary to preserve the public health. Such rules and regulations, when promulgated, have the force and authority of law, and are to be enforced, if necessary, by the entire power of the State."

The same powers are given to the Iowa Board in the same words, and by a recent enactment similar powers have been granted to the New Hampshire Board. In Arkansas, "At any time the Governor of the State may require the State Board of Health to examine into nuisances or questions affecting the security of life and health in any locality, and in such case the said Board shall have all necessary powers to make examinations, and shall report the result thereof to the Governor." In accordance with the report of the Board the Governor may declare the matter or thing under consideration a nuisance, and is granted the necessary powers to have it changed, abated or removed. New York, in 1882, adopted the same as an amendment to her law.

In England the powers and duties of the local government board are various.

It acts in many cases as a board of appeal; the by-laws of the local authorities must be submitted to it for approval; it may from time to time make, alter or revoke regulations for the prevention of contagious diseases; it may require any two or more local authorities to act together, or for various purposes may form two or more districts into a united district, or may unite two or more districts for the purpose of appointing a medical officer of health; it may by provisional order, dissolve any local government district or merge it into some other urban or rural district; it may invest a rural authority with the powers of an urban authority; it may order and compel the local authority to undertake and contract to clean the streets, and remove and dispose of garbage; it may, when a local authority is in default in performing its duty, make an order and enforce it by writ of mandamus if necessary, or appoint an agent to do the duty.

Some of our American State and provincial legislatures have done well in drawing freely from some of the better parts of the English law. Minnesota and Ontario have adopted, with slight changes, the following from the English law. "Whenever any part of England appears to be threatened with or is affected by any formidable epidemic, endemic or infectious disease, the local government board may make, and from time to time alter and revoke, regulations for all or any of the following purposes; (namely:)

"(1.) For the speedy interment of the dead; and

"(2.) For house-to-house visitation; and

"(3.) For the provision of medical aid and accommodation, for the promotion of cleansing, ventilation and disinfection, and for guarding against the spread of disease."

Among other commendable points in some of the laws establishing American boards may be mentioned the power, as far as it may be conferred by State legislative authority, of inspecting, and, if necessary, detaining steamboats, railway trains and other conveyances when necessitated by the existence of contagious diseases, as in Ontario, West Virginia and New Jersey; of appointing sanitary police as in Ontario; of appointing inspectors and assigning them "to such duties as the interests of the public health in any part of the State may require," as in New Jersey; of ordering "nuisances, or the cause of any special disease or mortality, to be abated and removed," as in Pennsylvania; the appropriation of an epidemic or emergency fund, as in New Hampshire, Connecticut, New Jersey, Maryland, Minnesota and Illinois; the giving to the State Board local jurisdiction coördinate with the powers of the local board when infectious diseases exist, as in Massachusetts; and the investing of the State Board with the powers of justices, in making examinations, as in Minnesota and Ontario.

#### LOCAL BOARDS.

In regard to local boards of health there is the question of the unit of local administration. Some contend that it should be the town or township, others that it should be the county. For some of the States county boards alone would be manifestly inappropriate when we take into consideration the size of some of the counties. In the State of Maine there are counties 125 or 130 miles in length, and one with an area large enough to make one Connecticut and two Rhode Islands.

There are various other questions which are of practical importance in forming local boards, and which have been answered very differently by the laws of different States.

What shall be the number of members on the board?

England answers by letting the local government board determine in each case.

In Ontario, the number in townships or incorporated villages is five,

in towns with a population less than 4,000 it is five, if more than 4,000, nine.

In Maine and Massachusetts, three to nine.

New Jersey has five to seven.

Delaware, three to seven.

Illinois, three on township boards.

Michigan, four.

New York, in cities, seven; villages, three to seven.

California, five, and in Pennsylvania, in cities, the same.

Minnesota, not less than three.

Who shall constitute the Board?

In England this depends largely upon property qualifications.

In Rhode Island, Indiana, Michigan and Iowa the municipal officers constitute an ex-officio board, and in Indiana and Kansas the county commissioners form an ex-officio county board.

In Maine and Massachusetts, when the town fails to elect a board, the municipal officers are the board.

The board consists in Connecticut of the justices of the peace and the selectmen.

In New York, in cities and villages, the board shall not be ex-officio, neither shall any of the members be connected with the city council, or on the board of village trustees. In towns the supervisor, justices of the peace, town clerk and one elective member.

In Illinois the township board consists of the supervisor, assessor and town clerk.

In Delaware there shall be at least one physician, and when there is a port physician he shall be an ex-officio member.

In Ontario, in townships and incorporated villages, the reeve, clerk and three rate payers; in towns of less than 4,000, mayor, clerk and three rate payers; in city or town of more than 4,000, the mayor and eight rate payers.

Pennsylvania, in cities, the mayor as ex-officio president and four appointed members; in boroughs the council forms an ex-officio board.

How shall the board be chosen—by election or by appointment?

We find it is by election in England.

In Maine and Massachusetts it is by election in town-meeting in towns; in cities the board of health is appointed by the municipal council.

In New York, in cities, appointed by council upon nomination by mayor; in incorporated villages, appointed by trustees; in towns, the one elective member is elected by the ex-officio members.

In New Jersey, Pennsylvania, Delaware and California, appointed by the common council.

In West Virginia, nominated by the county court and appointed by the State Board.

In Kentucky, county board appointed by State Board.

Shall the choosing of the board be optional or obligatory?

Outside of the States which have ex-officio boards, the law of Ontario, New York, Delaware, Minnesota and West Virginia, says "*shall*." In Maine, Massachusetts and Pennsylvania it says "*may*."

In Tennessee it says "*shall*" for every municipality of 5,000 or over.

What provision or penalty other than providing for an ex-officio board when a board is not chosen?

There is none in most of the States.

In Ontario the provincial board may appoint the appointive members.

In New York the board is appointed by the county judge.

In Pennsylvania the State Board may act.

In West Virginia vacancies may be filled by the State Board upon nomination of the county court.

What shall be the term of office?

The law says one year in Ontario, Maine, Massachusetts, Delaware and in villages and towns in New York, and in States having ex-officio boards. Two years in West Virginia and Pennsylvania.

Three years in New England, Minnesota, Ohio and in the cities of New York.

Two years in Kentucky for the county board.

In New Jersey it shall not exceed four years.

In California at the pleasure of the appointing power.

How many members shall retire yearly?

In Ontario, Maine, Massachusetts, and in the States having ex-officio boards, the whole board retires annually, in most cases.

In England, as nearly as may be, one-third shall go out of office yearly.

In New Jersey, in cities of more than 100,000 inhabitants, not more than three.

In Ohio two.

In New York and Pennsylvania, in cities, two.

In Minnesota, in cities and villages, one.

What provision or penalty when the board makes default of duty?

In England the local government board shall make an order limiting a time for the performance of their duty. Then if not done it may be enforced by a writ of mandamus, or the local government board may appoint some person to perform such duty.

In New York the performance of the duty may be enforced by a writ of mandamus at the instance of the State Board of Health, its president, secretary or any member thereof.

In Pennsylvania "the State Board of Health shall have power and authority to order nuisances or the cause of any special disease or mortality to be abated and removed," etc.

In Minnesota "any member of any Board of Health or Health Officer, who shall neglect to perform the duties required of him under

the provisions of this act, or any other acts relating to the duties of the Boards of Health or Health Officers of this State, or who shall neglect or refuse to obey any reasonable directions as to infectious diseases as shall be directed by the State Board of Health, shall be liable, upon conviction in any court having competent jurisdiction, to be fined in a sum not less than twenty-five (\$25) dollars nor more than one hundred (\$100) dollars and shall become disqualified from holding the office of a member of the Board of Health."

By whom shall the local rules, regulations or by-laws be made?

In England by the local authority and approved by the local government board.

Ontario, made by the Legislative Assembly and in force in every municipality till altered by the municipal council.

Maine, except in cities, must be adopted by the town in open town meeting.

New Hampshire, made by health officers and approved by the selectmen.

In Pennsylvania, by the Board of Health when the necessary powers are granted by the council.

Indiana, by the board under the direction of the State Board.

In most of the other States this power lies with the local board.

#### NUISANCES.

When an unsanitary condition or nuisance comes under the cognizance of the local authority, a preliminary notice to abate is usually served although not always a legal requirement. In regard to the further proceedings, the law says:

In Ontario, Maine, Massachusetts, Delaware, Michigan, Iowa and most of the other States, that the local board *shall* or *may* abate at the expense of the owner.

In New Jersey may abate in a summary manner, or file a bill in a court of chancery for an injunction.

The provisions regarding the important matter of the resulting costs and expenses of abatement are in the English law that the "costs shall be deemed money paid for the use and at the request of the person on whom the order is made." The costs may be recovered in a summary manner or in any county or superior court. Costs recoverable from owner may be recovered from the occupier, to be deducted out of the rent. The court shall have power to divide costs, expenses and penalties.

In Ontario, the board may recover costs by action or distress. In case of the non-payment thereof the same shall be recovered in like manner as municipal taxes.

In New York the board may sue and recover costs of abating. If the execution is not satisfied the judgment shall be a lien upon said

premises, having preference over all other liens or incumbrances whatever.

In New Jersey the board shall have the right to recover by action of debt the expenses incurred, or, "if it shall be deemed inexpedient to bring such suit, they may present a bill to the local municipal authorities, and such bill shall be paid by the municipal government."

In Illinois the board shall cause suit to be brought under the criminal code.

In Iowa costs to be recovered by civil action in the name of the State.

Regarding the power of entry to examine or abate nuisances the law of England says: "The local authority or any of their officers shall be admitted. If admission is refused, any justice *may* issue an order of admission."

This is generally the law in our States, excepting in some it is said that the justice *shall* issue his writ.

In case of default of duty of the local board, what redress for the individual or the community against nuisances?

In England the individual may make complaint to a justice. The local government board may authorize any officer of police in the district to abate.

In Ontario the provincial board may investigate, and, if necessary, abate.

In Massachusetts appeal may be made to the county commissioners.

In New York the State Board may make an order and enforce it.

In Pennsylvania, may be enforced by the State Board.

In Maine, "any person injured may maintain an action on the case for his damages."

#### CONTAGIOUS DISEASES.

An examination of modern statutory enactments for the prevention and restriction of the contagious diseases will show that, as can also be found in the laws of a century ago, there is pretty uniformly provision of some kind made for the notification of the arrival or existence of an infected case, for isolation in hospital or otherwise, and usually for the imposing of certain obligations upon householders and physicians.

We do not, however, so frequently find the law taking cognizance of many other things which the modern health officer knows is often indispensable to success.

For example, the laws of many of the States are deficient in provisions regarding the nurses and attendants upon the sick, and the danger of their transporting infection to others. The law of Ontario, however, is explicit on this point:

"Except the attending physician or clergyman, no person affected with small-pox, scarlet fever, diphtheria or cholera, and no person having access to any person affected with any of the said diseases shall

minge with the general public until such sanitary precautions as may be prescribed by the local board of attending physician shall have been complied with."

So is the Minnesota law excellent in this direction.

Provisions for the restriction of the movements of persons and things, generally, for the purpose of preventing the transmission of contagion are virtually absent in some of the States, but in other directions the laws are comendable.

England has this:

"Any person who—

"(1). While suffering from any dangerous infectious disorder wilfully exposes himself without proper precautions against spreading the said disorder in any street; public place, shop, inn or public conveyance, or enters any public conveyance without previously notifying the owner, conductor or driver thereof that he is so suffering; or

"(2). Being in charge of any person so suffering, so exposes such sufferer; shall be liable to a penalty not exceeding five pound; and a person who, while suffering from any such disorder, enters any public conveyance without previously notifying the owner or driver that he is so suffering, shall in addition be ordered by the court to pay such owner or driver the amount of any loss and expense they may incur in carrying into effect the provisions of this act with respect to disinfection of the conveyance."

Maryland has this section of the English law, and the following admirable one appended to it:

"Any person, parent or guardian, or other party, who carelessly carry about children or others affected with infectious diseases, or who knowingly or wilfully introduce infectious persons into other persons' houses, or permit children under their care to attend any school, theatre, church or any public place where they will be brought in contact with others, shall be liable to a penalty not exceeding one hundred dollars for each and every such offense."

Michigan and Minnesota have also excellent provisions in this direction.

Disinfection is by no means a new word, yet it is too modern to be found in the law of some of the States,

The law of Maine (Chapter 14, section 9) speaks of "purifying" infected articles, but whether this shall be with the mild methods of the washerwoman, or by the more effectual germicidal processes, the law does not say.

The English law says on this point:

"Where any local authority are of the opinion, on the certificate of their medical officer of health, or of any legally qualified practitioner, that the cleansing or disinfecting of any house or part thereof, and of any articles therein likely to retain infection, would tend to prevent



or check infectious disease, it shall be the duty of such authority to give notice in writing to the owner or occupier of such house or part thereof, requiring him to cleanse and disinfect such house or part thereof, and articles, within a time specified in such notice."

Ontario and Maryland have adopted this section, and so has Minnesota, with an improvement including buildings, cars, vessels and vehicles in the same provision.

Satisfactory regulations regarding infected clothing are not found on the statute books of most of the States.

In England "Any person who gives, lends, sells, transmits or exposes, without previous disinfection, any bedding, clothing, rags or other things which have been exposed to infection from any such disorder, shall be liable to a penalty not exceeding five pounds."

It is further provided that "any local authority may direct the destruction of any bedding, clothing or other articles which have been exposed to infection from any dangerous infectious disorder, and may give compensation for the same." And "any local authority may provide a proper place, with all necessary apparatus and attendance, for the disinfection of bedding, clothing or other articles which have become infected, and may cause any articles brought for disinfection to be disinfected free of charge."

Ontario, Maryland and Minnesota have the same, or very nearly the same.

Particularly praiseworthy is the law in England, Ontario and Maryland regarding infected rooms and the liabilities of those who let them without adequate disinfection, and regarding infected vehicles and the requirements for their disinfection.

In the laws of Maine there is nothing to protect the public from the danger of infection in the burial, disinterment and transportation of the bodies of those dead of infectious diseases.

Commendable features of the law of Massachusetts and Michigan are provisions for the protection of schools from the contagious diseases.

What I have said I have entitled "A comparative view of sanitary laws and what changes are needed in those of Maine." As a comparative view of the subject it is very imperfect for not including the laws of all the States, and probably for frequent errors and misapprehensions.

As treating wholly of statutory laws in contradistinction to provisional rules and regulations made by virtue of delegated legislative power, it does an injustice to certain States, particularly to Illinois, whose sanitary laws are largely of this kind. The object has not been to teach, but to suggest, with the hope of learning from the resulting discussion regarding the changes needed in the laws of Maine.

Dr. Ezra M. Hunt, Secretary State Board of Health of New Jersey,

said he could not see how any gentleman could prepare a paper of this character without submitting it to the different State boards of health for verification. He noticed several important errors in it, yet considered the general plan to be excellent, and thought it would be valuable to the members of State or local boards of health.

Dr. H. P. Walcott, President State Board of Health of Massachusetts, recognized the value of the paper, but thought it should be submitted to the State Boards of health for revision, and moved that the subject be referred to a committee of which Dr. Young should be chairman, to report a codification of the health laws of the several States and Provinces at the next meeting of the conference.

Dr. H. B. Baker, Secretary State Board of Health of Michigan, did not agree with the idea that State Boards should be mandatory. Legislative and judicial functions should be abandoned.

Dr. Cassidy, of Toronto, said he hoped the committee would consider the money side of the question. In school matters it is obligatory that the money which the school trustees require shall be furnished, but in health matters it is not so. He said on his side of the line the question is, "Where are the funds coming from?" That one point he would like to see a comparison of in the various States and Provinces.

Dr. C. W. Covernton, Chairman Provincial Board of Health, considered it of the utmost importance that State boards should have executive authority.

The motion to submit the question to a sub-committee was adopted, and Dr. A. G. Young, of Maine, Dr. H. B. Baker, of Michigan, and Dr. William Oldright, of Toronto, were appointed that committee. (Dr. McCormick in the chair.)

The following resolutions were then taken up :

From Pennsylvania—

"What precautions should be taken to prevent the bodies of deceased persons from becoming a source of injury to the public health during transportation on lines of public travel?"

From Michigan—

"1. *Resolved*, That the bodies of persons dead from the following-named diseases should not be transported outside the jurisdiction of the health authorities in which the deaths occur: Diphtheria, scarlet fever, small-pox, cholera, yellow fever and typhus fever."

"2. *Resolved*, That persons sick with diphtheria, scarlet fever, small-pox, cholera, yellow fever, typhus fever, measles, or whooping cough should not be transported outside the jurisdiction of the health authorities in which the sickness occurs.

"3. *Resolved*, That bodies of persons dead from diseases other than those mentioned in Resolution No. 1 should not be transported except by the permission of the health officer of the locality in which the

deaths occur; and in case of communicable diseases other than those named in resolution No. 1, notice should be given to, and whenever practicable, permission should be received from the health officer of the locality to which it is desired to take the body.

"4. *Resolved*, That a permit for the removal of a dead body should be given only on assurance of its having been properly embalmed, suitably prepared, by being surrounded with disinfectants, or enclosed in a hermetically sealed metallic case."

Dr. Benjamin Lee, Secretary of the State Board of Health of Pennsylvania, said that quite unexpectedly he discovered a few days before leaving home that he was "down on the programme" for a paper on this important subject. The documents which the chairman of the "Committee on the Supervision of Travel and Traffic," Dr. Joseph F. Edwards, had collected in reference to it from different State boards of health in compliance with a suggestion from the secretary of this conference, were all in the possession of the latter and at his house out of town, so that it was quite impossible to fulfil the task assigned him. He was, however, so much of the opinion that formal papers are not desirable at this conference and that a free interchange of experiences and opinions in regard to the work in which we are engaged in common, unhampered by long and labored essays, will tend so much more directly to our edification, that he felt the less inclined to offer an apology. His attention was first called in an official way to the subject of the disinterment of dead bodies which had been the subjects of infectious diseases by a circumstance of so peculiar a nature that he thought he would not be wasting time by relating it. He continued as follows:

"Very soon after the establishment of our State Board of Health, I was waited upon by a lawyer from one of the towns in the interior of the State to know whether the Board would sanction the exhumation and removal of the body of a man who had died of small-pox. The local board of health had forbidden the exhumation, but the widow was extremely anxious for the removal and he had come on her behalf to inquire whether we could not reverse their decision. I replied that the object of the State Board in its relation to local boards would always be to uphold them in all their efforts to protect the public against infectious diseases, and not to weaken their authority, and that in this instance we should certainly deem it our duty to sustain their ruling. I subsequently learned the history of this case and felt happy in having decided as I had done. It appeared that the deceased was a lawyer of some prominence who was thoroughly imbued with the anti-vaccination heresy. In public and in private, on the street, in the social circle and through the public press, all his efforts were concentrated, both by denunciation and ridicule, to the end of discouraging his fellow citizens from subjecting themselves or their children

to this operation. Finally he was taken sick and his physician announced to him that he had small-pox. The case proved to be confluent, of the worst type, and he died in great agony. Fortunately his reason was spared him long enough to enable him to understand and repent of his long course of crime. Who knows how many lives he may indirectly have sacrificed by his wicked presumption before he committed suicide himself. And it was this horribly infected body of a man who had spent his best energies in exposing his fellow beings to infection, which his widow now wished, in order to gratify a mere sickly sentimentality, to render a new center of contagion, and thus add still other victims to his list. I was thus deeply impressed with the importance of placing this matter under strict control; but I felt that unless other States were willing to coöperate but little could be accomplished for the protection of the people of my own. It was with this object in view that I requested the secretary of the conference to give the subject a place on the programme for discussion.

“At the meeting of our board in May last, after conferring with a representative of the undertakers of Philadelphia in order to discover what precautions were usually taken in that city in preparing the dead for transportation, it was considered wise to obtain information on a wider scale from the health authorities of other States, and the subject was referred, as already stated, to the “Committee on the Sanitary Supervision of Travel and Traffic,” for further investigation. This committee issued a circular to the boards of health of all the States, inquiring what regulations, if any, were in force in their respective domains. Replies to this circular were received from twenty-one States. From these it appears that nine of the twenty-one, namely California, Delaware, Georgia, Louisiana, Maine, New Jersey, Ohio, Rhode Island and Tennessee are entirely without either State board of health regulations or statutory provisions in reference to this matter. To these it would probably be fair to add a majority of the sixteen from which no answers were received. These are Arkansas, Colorado, Florida, Illinois, Maryland, Minnesota, Mississippi, Nebraska, Nevada, North Carolina, Oregon, South Carolina, Texas, Vermont, Virginia, West Virginia.

“The twelve States in which either Legislature or the State Board of Health, or both, have thought the subject of sufficient importance to make it necessary to exercise some control are therefore Alabama, Connecticut, Indiana, Iowa, Kentucky, Kansas, Missouri, Michigan, Massachusetts, New Hampshire, New York and Wisconsin. In six of these, namely, Alabama, Kansas, Kentucky, Iowa, Indiana and Missouri, the conservative course has been adopted of absolutely prohibiting the transportation of any body that has died of small-pox, Asiatic cholera, typhus fever or yellow fever.

“The bodies of those dead from diphtheria, scarlet fever, typhoid

fever, erysipelas, measles, or other contagious or infectious disease, except such as have been named, must be prepared for shipment by being wrapped in a sheet thoroughly saturated with a strong solution of chloride of zinc, in the proportion of one-half pound of chloride of zinc to one gallon of water, and then inclosed in an antiseptic interment sack hermetically sealed, before being placed in the coffin, unless the coffin used is air-tight.

"All other dead bodies may be transported, provided they are enclosed in air-tight wooden boxes lined with zinc, copper or lead; or in air-tight cases. If any other form of coffin is used, the body must be inclosed in an hermetically sealed antiseptic interment sack.

"In the State of Indiana, the restrictions in regard to bodies which have not died of a contagious or infectious disease are wisely made less rigid during the cold season, from November 15th to May 1st. The model adopted by most of these States appears to have been the admirable series of 'Rules of the Chicago, Rock Island & Pacific Railway Co.' The Medical Association of the State of Alabama, which is also the State Board of Health, has contented itself with simply adopting it as a whole.

"In the six remaining States which have adopted 'rules' or passed laws, the transportation of all bodies dead of whatever form of contagious disease is permitted under certain restrictions, requiring disinfection, embalment, antiseptic envelopes, hermetical sealing and the like, insisted on with more or less strictness. Many of the regulations mention an "antiseptic interment sack." To insist on the use of this is unwise. In the first place it is liable to be punctured or ruptured, and then ceases at once to be hermetically sealed; and, in the second, it is a patented article, and therefore involves an unnecessary outlay. The plan authorized by the board of health of the city of Philadelphia commends itself as being at once effective and inexpensive. The coffin, of whatever kind, unless it be an absolutely secure metallic coffin or casket, is placed in a tight wooden box lined with felt, which has been recently smeared with pitch. The cover of this box is provided with a flange near the edge which sits in a groove on the edges of the box. This groove contains a strip of India rubber. When the cover is screwed tightly down upon this rubber strip the box is sealed as hermetically as a preserve jar. The object in framing all regulations of this kind should be to protect the public health with the least possible interference with private rights and the least possible involvement of expense. I cannot but regard the absolute prohibition of the disinterment or transportation of the bodies of those who have died of the first four named intensely infectious and malignant diseases as eminently wise. When I remember that I have held in my hand a grain of wheat taken from an Egyptian mummy, three thousand years old, and that a similar grain to that has been planted and

has germinated, and when I remember that we are still in ignorance as to the length of time that the germ of any of these infections may retain its vitality, I feel that it is not wise to run the risk of saving these germs in half a dozen different States for the sake of gratifying a sentiment which is, after all, but a survival of the pagan worship of the dead. The importance of uniformity in such regulations cannot for a moment be questioned. When all the States have adopted a uniform system, and a uniform permit, the transportation of a body from State to State, if it has been properly prepared at the place of death for such transportation, will take place with perfect ease and all possible celerity, all the vexations, delays and expensive details which are now so apt to occur at the terminus of every road and the border of every State being done away with. And at the same time, it being thoroughly understood that certain requirements must be met, proper precautions will be taken at the point of departure, so that there will be no risk of bodies arriving, as they have arrived in the past in the city of Philadelphia, coming from the extreme southern confines of our country in a state of such advanced decomposition that the lid of the coffin or box has been burst open by the expansion of the gases of decomposition.

"In order to bring the subject properly before the conference I would move the adoption of the rules proposed by the delegation from Michigan, as they appear on the programme."

Dr. Wm. S. Harding, quarantine officer of St. John, N. B., said there was a matter he desired to submit to the conference bearing upon this question. It was a matter that concerned the credit of the whole profession, and he would like the conference to allow him to present it. [The matter being foreign to the executive work of Boards of Health it was thought that the matter came more properly before the American Public Health Association.]

The chairman stated that the question before the house was the motion of Dr. Lee that the resolutions, with the proposed alterations, be adopted.

The secretary read the resolution as amended.

Dr. S. W. Abbott, secretary State Board of Health of Massachusetts, thought that the idea embodied in the resolution was a good one. He said they had just the idea of this in the law of his State under the statute of 1884, but he thought some of the provision of the resolutions were rather arbitrary. It did not seem necessary that they should be applied to all bodies, especially those that had been dead for a space of years; that should be left to the jurisdiction of sanitary authorities. Persons who have been dead, and buried ten years in the ordinary manner, would cease to be a source of infection. The resolutions made no provision for this condition. The question of cremation is not considered. Does any one consider that the ashes of a man can

be infectious in the slightest degree? His impression was that a person ill with an infectious disease was more dangerous to the public health than dead bodies. The fourth resolution was not definite enough; it says "that a permit for the removal of a dead body should be given only on an assurance of its having been properly embalmed, suitably prepared, by being surrounded with disinfectants, or inclosed in a hermetically sealed metallic case." Would you require this of all dead bodies, whether dead from communicable diseases or not? That should be definite. The method of embalming or preparing may be left to the discretion of sanitary authorities. Certain cities have certain rules, and while the idea is an excellent one it is one of those things that may be modified.

Dr. Baker wished to make a motion, or request, that instead of taking the last resolution first, the resolutions be taken up in their order that each one might be discussed and amended. He would have some question himself on each one of them, and would move that the resolutions be considered in their order and adopted or rejected as the case might be.

The motion was adopted.

Dr. Baker said the resolutions had not been submitted to the Michigan State Board of Health; they were written by himself and were not the views of the State Board of Health. At the last meeting of the Board when he read them over, one or two objected to the first resolution immediately; they did not want it passed, and he could not say himself that it should not be modified. Prof. Vaughan said at the last meeting that bodies might be transported without difficulty if they were properly prepared and he thought bodies might be prepared so they would not carry disease.

Dr. Ezra M. Hunt, Secretary State Board of Health of New Jersey, thought it doubtful if they should adopt these resolutions, and the first he would not be willing to vote for in its present form. He thought every State should give its permit and state that the body had been made safe for transportation, but hoped they would go slow, very slow, in the matter. He agreed with Dr. Abbott that the danger is in the hermetically sealed metallic case. It is a very complicated question, and he believed that it should be left to State and municipal authorities.

Dr. G. P. Conn, President State Board of Health of New Hampshire, said that it seemed to be a matter in which each State had rules and regulations governing the special locality. In New Hampshire, while they have no law so far as the State is concerned, there is an unwritten law in the regulations of railroads. They will not take any body whatever upon their trains until a certificate has been given stating that the person did not die of an infectious or contagious disease. In that way the whole subject is under control. It is expressly

stated upon the authority of the attending physician, that the body did not die of contagious or infectious disease, and until that is presented to the railroad authorities no body is taken upon the trains. Again, we have in New Hampshire a statutory law that nobody can be interred until a permit has been granted, and that permit is on the certification of the attending physician, or in case no physician was in attendance during the last illness, a permit may be granted upon the representation of persons in attendance upon the deceased person or present at the time of death, therefore the registration of deaths has been brought down to an absolute certainty. There are large fines on any undertaker who buries any body before he has received this permit, and there are other parties who are fined if they aid or abet in any way in the burying of a body before the permit is granted.

Dr. Charles H. Fisher, Secretary State Board of Health of Rhode Island, thought the resolution should be referred to a committee for modification.

Dr. Hunt knew of no reason why the question should not be disposed of in a few minutes. The remarks of Dr. Conn showed that rules may be formulated. Railroad companies take a much more advanced stand upon this question than health authorities. The first resolution should be adopted as it stands. He was at a loss to understand the expression "mandatory" in connection with the conference. All that could be done was to advise. The question is asked, is the body a source of infection after ten years? He took the ground that it is. If the seed of grain that has lain buried in Egypt for centuries, will germinate when placed under proper influences, why may not the disease germ after ten years convey disease? He would be in favor of adopting the first resolution.

Dr. Fisher thought that resolution had better be dropped out, as the same idea was embodied in the fourth resolution. Dr. Fisher's recommendation was adopted. The whole subject was referred to a committee consisting of Dr. Benjamin Lee, of Pennsylvania, Dr. Charles H. Fisher, of Rhode Island, and Dr. Samuel W. Abbott, of Massachusetts.

Next in order were the questions on vaccine culture, presented at the last meeting of the conference, and in addition thereto—

"What breed or breeds of cattle are most desirable for such use?"

"Is a breed having fair skins and more delicate frames unfitted to become *vaccinogenes*, through a liability to impress upon or include within the virus yielded by them the germs of tuberculous disease, with the possibility of conveying the liability to such infection to a person vaccinated with virus from an otherwise normal animal of a breed such as has been indicated?"

In connection with the subject, Dr. Conn read the following paper



by Paul Paquin, Professor Comparative Medicine, etc., Medical School and Agricultural Department Missouri State University :

#### Horse-Pox—Cow-Pox.

The affections bearing that name are one and the same. I will, therefore, speak of them as one. It is a contagious, virulent, inoculable malady, characterized by the formation of vesicles, pustules, etc., in certain regions of the body, including the mucous membranes. Owing to its power of transmission from animal to animal, animal to man, and vice versa, and also from man to man, thereby conferring immunity against *small-pox* or *vaccination*, it is a disease of the greatest interest to the public and the medical world. Consequently a study of its true nature can never be carried too deeply. During the last years this study has made great progress. The theory of disease germs brought new light on the subject, and an almost complete revolution has taken place, so far as the nature and origin of vaccine is concerned. Gluge, Pincus, Growitz, Kleber, Klebs, Chauveau, Duclaux, Tonssaint, Pasteur, Warlemont, etc., have led the authority of their name to researches and publications, which have advanced our knowledge wonderfully. Let us review a few historical facts while we consider briefly the nature of this pustulous malady.

The vesicles of horse pox or cow-pox contain a serous fluid, in which may be seen minute, transparent corpuscles, which are probably the crystals described by Gluge in 1838, and the nature of which was demonstrated later by Kleber and others. These corpuscles, it is now conceded by authorities, constitute or contain the active principle of infection, and are considered as virulent parasitic micro-organisms. Indeed, their invariable presence in the vesicles in all their stages; their regular form or shape and mode of grouping together four by four, as a rule; their comparison with other kinds of infectious microbes justify this opinion. Whether in man, in the horse or in the bovine specie, we can always find in the vesicles these organic bodies, and they always appear as perfectly *spherical micro-cocci*. Inoculation with fresh vaccine matter deprived of these cells or corpuscles by laboratory filtering process *proves inactive*. This has been conclusively demonstrated by Kleber, and Chauveau, M. D., V. S., late Director of the Veterinary School of Lyons. The bacteriologists have made wonderful strides, and now the part that some microbes play in contagious maladies is beyond reasonable dispute.

At present no one is known, however, to have succeeded in cultivating satisfactorily the germs of vaccine or of small-pox outside the animal body, as is done with the germs of some other contagious affections, such as anthrax, hog cholera, chicken cholera, septicæmia, etc. No pure media has been discovered which contains the elements necessary to their healthy growth and multiplication. If ever this

occurs—and I feel sure it will before long—science will have accomplished a glorious task, for it will have done away with the process of producing vaccine in the animal system; a field which may be infected by other virus of deadly nature to man, and which, therefore, are fields which can safely be tilled only by those who have sufficient knowledge of comparative pathology in contagious diseases.

The *micro-cocci* of vaccine resembles physically that which is found in small-pox itself. Yet there is surely some difference in their nature, for the results they give by inoculation or by contamination in man or beast vary to a certain extent. That point of difference has escaped the scientists in their researches. Still it is nothing that should cause any doubt on the generally accepted doctrine that the microbe is the cause of the disease, because if we have failed so far to elucidate such details in the germs or seeds of the world, invisible without most powerful optics, we have also failed to elucidate or explain the very same thing in the organisms which we see and appreciate with the naked eye. "Who can tell," says Warlemont, "the kernel of a sweet almond which gives us a nourishing fruit with that of the bitter almond which contains the most potent poison? Who can tell among two poppy seeds that which will give birth to a red flower? Some difference must exist in the molecular arrangement of those organic substances."

Again, if we go into the animal kingdom, could one tell which of two animal spermatozoa may engender a white or colored individual?

The growth of the germs of vaccine takes place first in the "*rete of malpighii*." It is there that they seem to find in more abundance the elements necessary for their existence, development and multiplication. Perhaps it is because a plastic media is not a suitable soil for them, for Pincus observed that in the first day their multiplication is very slight in the zone of inoculation where exists naturally a more active circulation and a certain reaction due to the operation, whilst on the contrary their proliferation may already be considered deeper in the tissues where cells were carried, probably by the lymphatic circulation. Then, when this reaction has subsided, the second day, they increase much more rapidly, even in the zone of inoculation.

The pustule of vaccine has an infractuous cavity containing leucocytes, hematites, debris of nucleus and microbes irregularly disposed in masses—some microbes in groups of fours as already stated. There is nothing in the anatomical and pathological structure of the pustule and the physical appearance of the microbe in vaccine which can afford one to find a difference with the pustule of small-pox. Their histological disposition are analogous.

#### VACCINE AND VACCINATION.

Vaccination was discovered, lost, and found again before it was in general practice.

Varola of man was imported into Syria, Palestine, Africa, by the *Sarrazins* (French word); into Spain by the *Maures*; into France by the Crusaders, and into the islands and the New World by European vessels, and caused serious loss of human life in all times. Vaccination, of course, was not known then; but, however, as far back as the XVI century a preventive of this nature was put into practice; it was *Variolization*—i. e., inoculation of small-pox virus itself. The Georgian and Circassian merchants variolized their slaves to save them from detrimental disfiguration by pox-marks. In 1670 this operation was introduced in Constantinople, and from there passed into England in 1730.

Cow-pox, on the other hand, was known in Persia, Holland, France, England, Ireland, Denmark, Norway, India and, it is said, in America also, from immemorial date; but the affection was not well-known, nor understood, and its properties for preventing small-pox were totally ignored.

I need not recall to your memory that it is only in the latter part of the last century that the immortal Jenner, in *practicing variolization*, discovered people upon whom the action of the inoculated virus of small-pox remain without result. These persons, it was ascertained, had previously contracted cow-pox in milking cows. Jenner, struck by this coincidence, made investigations, and soon ascertained that cow-pox virus conferred immunity against small-pox. Such was the discovery of vaccination. Jenner, however, did not stop there; in pursuing his researches he discovered, besides, that cow pox came from the horse. He observed cases of horse-pox transmitted to man and cows; on some farms he saw horse pox transmitted to cows by feeders, herders and shoers. This disease of the horse he then named *sore heels*, *grease heels*, on account of the aspect of the pustules and their usual location at the extremities. But Jenner was not understood; his naming the disease *grease heels* lead many a medical observer and student astray, for there was, as there is now, another disease peculiar to the equine family which affects the limbs, and is called *grease*; but it is not inoculable—at least not to cattle.

Dr. Loy, in 1802, gave a description of the true horse-pox, and he termed it *constitutional grease*, in order to distinguish it from ordinary grease legs. He gives in that description an account of the eruption, and states very justly, that it does not occur simply on the extremities, but also on the mucous membranes, the nose, and sometimes even the body. Unfortunately, Mr. Loy's writings were totally ignored until about the year 1861. From the time of Jenner and Loy's labors the medical fraternity of Italy, France, Germany, etc., wandered uselessly until that year, although in 1860 a step in the right direction was made. Everywhere the origin of vaccine was searched for in *grease heels*, *quittors*, etc., but, of course, without benefits. The

question became very obscure; confusion existed even among the physicians, and some advocated the existence of inoculable, non-inoculable *quittor* and *grease*. During that period, however, horse-pox had been observed, but not recognized, and it was termed *phlyctenoid herpes*, *aphthous stomatitis*, etc.

In 1860 a pustulous contagious disease broke out at Rieumes among horses; it was transmitted to eight mares by the use of a pair of hobbles, which had been applied on a first beast, whose pasterns were affected. The affection was then studied and described by Sarrans, a veterinarian of the locality. A young mare was sent to the veterinary school of Toulouse, where Mr. Lafosse thought he had to deal again with an acute case of *grease*. Inoculation of the matter to cattle undeceived him, however, for he thus obtained *cow-pox*, which he reproduced on another cow, thence on a child. Mr. Urbain Leblanc, a noted veterinarian of Paris, went to Toulouse, and saw that the disease was different to *grease*, and, consequently, gave it another title. He called it "*maladie vaccinogene*"—which means vaccinogenous malady. At this epoch the academies of medicine began the discussion of the nature and origin of vaccine. It is then that Mr. Bauvier, at the Academy of Paris, produced Mr. Loy's writing of 1802. The question was not entirely cleared then, but researches continued, until finally, in 1864, thanks to Dr. Depaul and Dr. Bouly, a veterinarian, Professor of the Museum of Natural History and late President of the French Academy of Science, the long discussed subject was solved. It was proved beyond a doubt that cow-pox and horse-pox are *one*.

#### ANIMAL VACCINATION.

Notwithstanding the above historical lines, which have been transmitted to us, we can not say positively that animal vaccination is of very recent date. In fact we read narratives to the effect that Dr. Vy. of Elbeuf, practiced the operation vastly among calves with vaccine from the human body about the time of Jenner—Bavaria and Germany following suite. This was termed *retro-vaccination*. The culture of true animal vaccine according to its present meaning, i. e., the culture of horse-pox or cow-pox through the bovine system, dates from 1800, when it was practiced in Nancy, France, by Valentine, and at Rheims by Duquenells. Afterwards it passed into Naples through the influence of Galbiati and then his pupil, Negri. But, as stated, it was only in 1864 that the practice truly took root in the world, after Palasciano, of Naples, had attracted the attention of the medical congress held at Lyons. From Naples it was introduced definitely into France in 1865 by Dr. Lenoix, and thence in Belgium by Dr. Warlemont. These two physicians established vaccine institutes, from which arose numerous others in Europe and America.

This method of procuring vaccine through the cattle system is a

great benefit to humanity. It protects mankind against small-pox as effectively as humanized virus, and it avoids, besides, the dangers of *vaccino syphilis*, which may result, after vaccination, with the latter. It is well-known that vaccination from person to person has been the means of inoculating syphilis. I need not dwell on this point, which has been so thoroughly discussed by the French and Belgian academies of medicine during the year 1860 1866. Drs. Viennois and Depaul alone give accounts of over 300 cases of this nature, due to vaccination with lymph from apparently healthy people. The "Archives Generales de Medicine," 1860; the "Imperial Academy of Medicine of Paris," 1864-1865; the "Academy of Medicine of Paris," 1865; the "Union Medicale," 1862-65; the "Medical Gazette of Lyons," 1866, give us incontestable proofs of such occurrences. This is sufficient argument to satisfy the physician and the household he attends professionally, that pure animal vaccine has superior merits and deserves preference.

But the advancement of bacteriology has demonstrated that, though avoiding one danger, we have other eminent ones left. Since it has been proved that many other contagious diseases are due to a specific inoculable virus, and that certain animal diseases are transmissible from animal to man, and vice versa, the question arises: Are we safer in using horse or cow-pox vaccine to protect ourselves against small-pox than in using vaccine from another person's arm? Since we know, for instance, that glanders and farcy, and tuberculosis are common to man and beast, are we not opening the gate to those dreadful enemies of health and life? This is a most pertinent question. As to glanders and farcy, we need never fear if we use vaccine attenuated through cattle, as these animals never contract this disease even by inoculation. This fact is well settled.

But tuberculosis seem to affect most all kinds of domestic animals. I have seen, during my stay in Europe, the malady transmitted by inoculation and ingestion from man to animal, and animal to animal. I have seen chickens, rabbits, etc., getting tuberculosis from man's sputa by ingestion and otherwise; I have seen horses—the most refractory kind of animal to the disease—contracting it by inoculation; I have read hundreds of thoroughly reliable experiments of the same nature, and I have often carefully perused various reports of investigators and commissions in which appeared numerous observations tending to prove the transmission of the abominable constitutional disease from animal to man. And, judging from all that and the parasitic nature of the malady, I have no doubt that it can be and is too frequently taken from animals under various circumstances. Almost all the countries of the world furnish statistics and other writings to confirm this conclusion. But it remained for a far off country, almost unknown to the principal "Annales" of the medical world, to set first

seriously to work to unmask and extirpate, if possible, the polluting, hideous and yet invisible monster dealing its deathly blows from ambush. That country is Australia. There (as elsewhere) the most favorable ambush of the organisms, so infinitely small in size, and yet so monstrously terrible in their pernicious power, proved to be the milch cow and the fat (?) beef of the butcher shop. It is a notable fact, according to various reports, that in Australia people and cattle are attacked by tuberculosis to a very great extent. It is this truth, it appears, which lead her people to institute inquests in 1884-85 for the discovery and destruction of the cause—inquests which resulted in recommending and adopting later, in Melbourne, certain wise laws, rules and regulations providing for competent inspection of dairies, milk and meat, for the special purpose of excluding from food all tuberculous articles, and thereby avoiding the contagion. The report of 1885 of this commission (see Victoria, Australia, 1885,) abounds with conclusive affirmative evidences of the transmission of tuberculosis to man through beef and milk. Man may get the malady when he drinks milk from a cow having tubercles in the udder, and from meat when it contains the same, when the virulent principle has not been destroyed by cooking or otherwise. But I need not go further on this line of arguments. It is not my object to discuss the nature and usual origin of tuberculosis as it appears in man. Since we know it to be contagious, the point to consider in regard to animal vaccine and vaccination is: What kind or what breed or breeds of cattle are more subject to tuberculosis? Are certain bovines of certain colors more subject to it than others? In a word, how are we to produce and gather vaccine through the body of cattle without gathering at the same time the poison of tuberculosis?

In reply to the first question, I will say that, since tuberculosis is due to a specific micro-organism, or living virus, if you like it better, which finds its way in the cattle system, where it meets proper soil for its development, it seems rational to believe that breeds have little to do with the disease in question; but naturally weak constitution, or, perhaps, already diseased bovines (troubled with other maladies), may show the effects of the germs quicker, because in their constitutions they find possibly better suited soils for their rapid proliferation, which, of course, whether unusually more prolific or not, tells comparatively quicker on the already weakened system. From this we may infer that, no matter what healthy breed of cattle one may expose to the germs of tuberculosis, all those that have the same opportunities, under the same conditions, may become affected, irrespective of title or origin; but that, at the same time, some may resist the injurious effects much longer than others. It is a question of "fight for existence"—the weak subjects falling sooner under the constant mining of the infectious microbes than the more powerful constitutions.

I believe that the idea that certain breeds of cattle are more subject to tuberculosis than others simply on account of the *breed* rests on a very weak foundation. For instance, it is very common to find among certain people a great tendency to regard the Jersey cattle as a consumptive lot. Their external appearance seem to lead some to this hasty conclusion. Nevertheless we might find tuberculosis probably as often in other much stronger breeds in appearances, but it remains unnoticed on account of their power of endurance which is superior to that of the Jerseys. That a weak system may show the effects of certain diseases sooner and crumble more rapidly under their influence is, I think, sufficiently established to leave little doubt, if any. Hence, since certain breeds of cattle are naturally weaker in constitution than others—in appearance at least—it is an act of prudence worthy of practice to be very strict when any of them are to be used as a field for the culture of vaccine for public use, but any cattle may be used if found healthy. To determine this point the history of the mothers and even the fathers should be inquired into, and the subject to be vaccinated should be critically inspected. The history of the father is, perhaps, less important than that of the mother, because, as a rule, the males kept for breeding purposes in the bovine specie are of superior order in every respect. This inquiry into the health of antecedents may be looked upon as exaggerated precaution, but we must not lose sight of the possibility of transmission of tuberculosis by heredity or infection of the foetus by the uterus, etc.

To avoid errors the choice of subjects for culture should be made by one who understands sufficiently the nature and symptoms of contagious diseases of domestic animals—not only tuberculosis, but others as well—for there may be some animal diseases whose effects upon man are not as yet determined. In a word, he who is acquainted with comparative pathology and can make a sound diagnosis of a disease—tuberculosis in particular in the dumb brute—is the most competent to direct the labors of a vaccine establishment. With all due respect to the medical profession—for there are two equally as worthy of public regard so far as science is concerned, if not in every other particular the first devoted to human health exclusively, the other to the lower animals while assisting greatly its elder sister; with due respect, I repeat, to the knowledge of the individual member of the two professions, I say it suffices not to be a graduate M. D., V. S., etc., but an operator should be as much as possible a pathologist and surgeon competent for laboratory with taste for such labors, and if he desires to make researches he needs to be a microscopist and bacteriologist as well.

Now, in young cattle, five to six months old, tuberculosis is seldom found. It is a slow progressing affection which shows only at a more advanced age the symptoms indicative of the development of tuber-

cules in the organs, and which appear, as a rule, in the organs of respiration first. Therefore, by choosing calves, we can always, I believe, avoid tuberculous subjects, even though heredity may be considered a possible source of contamination and contagion. In fact, if a calf gets tuberculosis before birth from its mother, which was in an advanced stage of disease, it is probable it will be puny enough then to exclude it from operation for this very reason. But, usually, a cow with advanced tuberculosis aborts, or if not in the advanced stage, her offspring may be sufficiently healthy to serve in its younger days. Nevertheless, I should never use one knowingly, for notwithstanding that the virus of the vaccine, or vaccine lymph, forms itself in the "rete of malpighii" (in the skin), which is not the preferred soil of the germs of tuberculosis, we must remember that the circulation of fluids in the system may, in certain conditions, carry the infectious principle in various parts of the body and favor its penetration into vaccine matter in way of formation. Consequently we are justified, indeed I believe it is a duty to call attention to, and keep in our memory the fact that tuberculosis may be transmitted to mankind by vaccine from tuberculous cattle. Yet, with all that, cattle—I mean calves—are, so far as we know, the most suitable animals for the production of this antidote, if I may so call vaccine, for it avoids, as I said, the danger of *vaccino-syphilis*, and it avoids, perhaps, even better than humanized lymph the danger of tuberculosis itself, which may be transmitted from man to man. The arguments in favor of the doctrines I uphold in this letter have undoubtedly their weak points, but the most important latest discoveries of science and many reliable observations of recent date, my own studies and observations, combined with older doctrines and exploded theories which I have searched and sifted to discover their logical principles, have served as a foundation for my utterances. If there are any doubts in regard to the contagiousness of tuberculosis, and its transmission to man from animals, let us give the people the benefit of the doubt and let us not wait until we have hundreds and thousands of poor wretches brought to our eyes, like the opponents of *vaccino syphilis* have done twenty-five years ago. Now, as to color of skin and light frames of animals to serve as vaccinegenous, it is conceded that white or clear colored skins are preferable. It is not because the pigmented skins are refractory to vaccine, but because the pustules are not so apparent in them as in the former, and hence the very moment opportune to reap the harvest passes unnoticed, and bad lymph is gathered. It is of the greatest importance to collect the vaccine lymph at a certain moment, which the competent vaccinator can judge by the appearance of the pustules, etc. If the lymph is collected before or after that moment, it is either inactive or impure. Therefore, always use, if possible, clear-skinned calves for the production of the medical agent in question. As to the



light frames, combined with weak constitutions, what has been said in regard to the latter, may be repeated here with as much reason. The nature of the frame, so far as its volume and weight are concerned, is immaterial to the actual production of *pure virus*, although seemingly, by common consent, light-weight animals are preferred. In conclusion, I will say, that in order to produce active, healthy vaccine lymph, be very severe in the choice of calves; use none but perfectly healthy calves, weighing from 150 to 300 pounds, with white or very clear skin, hair glossy, soft and unctuous to the touch, and then when the right time has come to collect the matter, be most critical on the choice of pustules, and use none but perfectly developed ones with all the other characters which science and experimenters of reputation have demonstrated as a proof of activity and freedom from impurities and foreign germs.

I need not explain here the special methods by which this is obtained. Success depends on theoretical and practical knowledge, which is acquired by those who devote some time to such work.

A few words in regard to the preservation of vaccine. Many methods are now in use for that purpose. Ivory points seems to have the preference in this country. The vaccine on these points does not, however, keep as long its activity as it does in some other preparations. But, perhaps, they come cheaper to the buyers, who generally intend to use them immediately, and this may account for their general adoption.

The best method known now to keep vaccine long in purity and activity is undoubtedly the pomade—a preparation made with chemically pure glycerine, etc. It may thus retain its activity several months, if kept in proper atmosphere and hermetically closed. This is the method we intend to use, besides the ivory points, in our laboratory, which, we trust, will be patronized by the various boards of health of the country. Their patronage will give us strength, scientifically and financially, and will insure the medical profession and the public the best vaccine obtainable. However, no matter what may be the patronage of our undertaking, we shall spare no efforts to have always in hand an article warranted perfectly safe and reliable in the full sense of the word. We sincerely hope that the country at large will appreciate our endeavors to place on a solid basis a thoroughly scientific vaccine farm and laboratory, established only for public benefit and scientific purposes. We are starting in a modest way, but with the greatest prudence. We have not the large barns and spacious buildings which harbor, as a rule, filth and germs of every description, but neat, clean, private, new or remodeled buildings of suitable size to insure all possible disinfection and other sanitary rules to be adopted easily, while the preparation of vaccine, after its collection, will be in a special, clean apartment.

I regret not having the time at my disposition to write a better article than what I have very imperfectly given you here, and I trust you will excuse me, remembering I am so crowded with work. You will imagine how busy I am at present when you read this and know that I had to write it away from home on official duty. It seems to me that really this scribbling in such hurried style of the points for discussion, and this miserable paper are unworthy of presentation. If, however, you find something in it of any interest to you, you will perhaps find it in your heart to ignore the many imperfections.

The secretary read the following subjects and points of discussion presented by State Board of Health of Missouri :

"1. How shall county boards of health be organized, managed and directed, in order to secure to the State Board, if such exists, the most efficient help and coöperation in general sanitary work, the reporting and proper registration of vital and mortuary statistics, and the enforcement of laws regulating medical practice in States where such enactments exist?"

Dr. Charles H. Hewitt, Secretary State Board of Health of Minnesota, stated that a county board of health stands in the same relation to the State Board that the family does to society. He said they had 1,050 efficiently organized local boards of health in Minnesota. The local boards have charge of the sanitary inspection of their districts, both in respect to men and animals. He explained the perfect system of communication between the State and local boards by stating that small-pox appeared in a distant township and within twenty-four hours he had a list of every man, woman and child who had been exposed, and within forty-eight hours after he received the first telegram every one was vaccinated or quarantined, and the disease did not go beyond the family in which it first appeared. The work was done by two local health officers and the expense to the State was \$10.50. Contagious diseases of animals are controlled in the same prompt manner. A little treatise upon glanders was distributed to the local boards of health. He found that in proportion to the efficiency of the local board organization, with the coöperation of the State Board, was the efficient sanitary work of the State performed. Local boards should understand that they stand shoulder to shoulder. When the local officers have any trouble, then it becomes necessary for him to visit the locality, and the people are so well satisfied with the rulings of the State Board that its decisions have never been disputed. He thought that the organization of local boards lay at the foundation of all sanitary work. Local boards look to the State Board for assistance. He enlisted the services of young physicians and found many competent men who liked the work. In the matter of expenses incurred, if the local board cannot pay, the State Board does; but the local boards have to pay if they can. The expenses incurred by the

health officers in an epidemic in Minnesota is so small that the people do not realize it. The appropriation for the year for the State Board of Health is \$5,000, \$2,500 of which is the salary of the secretary, and the balance used at the discretion of the board. They had organized a laboratory, and young men from the State University were glad to work in it for the experience it affords. One student obtained a scholarship in consequence of the advantages of his laboratory work.

Dr. Lee said he had listened to Dr. Hewitt's remarks with much interest. There had been in Pennsylvania a very strong pressure brought to bear for the establishment of county boards. He was glad to have the benefit of Dr. Hewitt's experience. There are no local boards outside of the incorporated cities and boroughs.

Dr. Oldright said he would like to hear from Dr. Hewitt in regard to nuisances. In these matters they needed men who were trained for the work, but boards of supervisors were not elected with special reference to their qualification as health officers. In times of epidemics the financial interests of the town are in danger, and the authorities are very glad to coöperate with the board.

Dr. Hewitt stated that none of the supervisors professed to be sanitary men, but it was surprising to see how much they knew about the work, and some of their best inspections had been made by these men.

Dr. J. N. McCormack, Secretary State Board of Health of Kentucky, said they had no township supervisors in his State. They had great difficulty in organizing county boards of health in any considerable number of counties, but that some five or six years ago the law was amended so as to leave the appointment of county boards of health to the State Board. He could not go so far as Dr. Hewitt did in speaking of the general efficiency of the local boards. He found no difficulty in times of epidemics, but in typhoid fever and diphtheria, which cause a far greater mortality, it was difficult to get them to take any very active steps. Another difficulty was in the collection of facts. It was to be hoped that they might be able by modern methods of sanitation to remove the causes of these diseases. In this they had not been able to get the active coöperation of the county boards of health. In very many instances they had secured efficient coöperation, and latterly, since the election of new health officers, the State Board had been able to get a fair sanitary survey of most of the counties of Kentucky, and he felt very much encouraged with the condition of health affairs in the State.

Dr. C. A. Lindsley, Secretary State Board of Health of Connecticut, said he was much interested in the report of Dr. Hewitt. In Connecticut they were perhaps far behind the Western States in the matter of sanitary work, and chiefly for the reason which had been mentioned, the aid and assistance which they ought to have from the local boards of health. In Connecticut there was a nominal board of health in

every town, consisting of the selectmen and the justices of the peace. A provision was made which authorized them to add such physician as they might choose, so that the board properly consists at present of the selectmen, justices of the peace and such physician as they may elect. It was provided that this body may delegate their duty and powers to a committee, and he considered that a very wise provision. At the last session of the Legislature a provision was made that on the Wednesday following the first Monday in October these boards of health shall organize. They were satisfied with the honor of being called the board of health, but in nine cases out of ten, except in an epidemic of small pox, they have never taken any action as a board of health; now they are required to organize and elect officers. In Minnesota and other States there seemed to be a mandatory power lodged in the State Board which his board knew nothing of. They can not require anything of anybody; they simply give advice. If it were possible to have more power he thought it might be expended with advantage, but he thought they had made a gain in regard to organization and in securing reports from local boards of health.

Dr. J. F. Hibberd, of Indiana, inquired of Dr. Hewitt whether he had reason to believe that there had been outbreaks of disease of which he had gained no knowledge. Whether the local boards gave their attention to cases of typhoid fever and diphtheria?

Dr. Hewitt said that typhoid fever sometimes prevailed of which they did not hear. The report of infectious diseases in his State is compulsory. Some communities would not call for a physician, and they had to compel the poorer classes to receive the attention of the physician. They sometimes absolutely refused medical attendance. Diphtheria was one of the most difficult diseases to corral. He said there were many outbreaks of which they never heard, but in the majority of cases they were glad of the help of the State Board. He said: "We preach and pray and exhort; we keep up the talk and are making headway. I tell you sanitary workers have got to work with the brake on. I have to run it with the brake on, and expect to wear the brake out." They distribute information in the form of circulars and publish a paper devoted entirely to the interests of sanitation.

Dr. Hunt, of New Jersey, said that in his State they were able to accomplish a great deal with the aid of the local boards. In addition to the local boards they appoint inspectors.

Dr. McCormack called attention to the resolution adopted by the executive committee of the American Public Health Association, "That the representatives of the State Boards of Health constitute a section of the American Public Health Association," etc., and stated that the consideration of the resolution would be in order at 5 o'clock P. M.

The meeting then adjourned to 2.30 P. M.

## AFTERNOON SESSION—2.30 o'clock.

The Conference met according to adjournment.

Dr. Abbott, in referring to Dr. Hewitt's remarks of the morning, said he was particularly pleased with the idea of publishing an independent paper under the control of the State Board of Health. It would bring the State Board into direct communication with the local boards, and they would all have the benefit of the questions discussed.

The following paper by Lucien F. Salomon, M. D., Secretary Board of the State of Louisiana, was then read :

**Report upon the Outbreak of Fever at Biloxi, Miss.**

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By LUCIEN F. SALOMON, M. D., *Secretary Board of Health, State of Louisiana.*

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On Tuesday, August 31st, several persons arriving in New Orleans from Biloxi, Miss., called at the office of the Board of Health of the State of Louisiana, and stated that at Cadet Point, the eastern extremity of the town of Biloxi, there were a number of persons sick with fever, and that two had died. It was rumored that the disease was yellow fever. Having received no information other than these reports and rumors, Dr. Joseph Holt, president of the Board of Health, immediately telegraphed (at 11 A. M.) to Dr. J. J. Harry, president of the Harrison county board of health (in which county Biloxi is situated), advising him of the receipt of these reports, and asking him for information in regard to the nature of the existing disease at Biloxi. At the same time I telegraphed to Dr. Charles Pelaez, whom I knew to be a physician resident and practicing in Biloxi. Having received no reply to these telegrams by 3 o'clock P. M., Dr. Holt decided, in the interest of the citizens of New Orleans, many of whom were sojourning in Biloxi for the summer, to proceed to Biloxi and investigate personally, the truth or falsity of the rumors, and endeavor to see the cases of fever with a view of arriving at a decision as to its nature. He asked me to accompany him, and we left New Orleans at 3.35 P. M., arriving in Biloxi about 7 o'clock. Upon our arrival we learned that a number of cases of fever did exist at the point named and were being attended by two local medical gentlemen, Dr. J. J. Lemon and Dr. J. W. Maybin, both of whom were unknown to us and entire strangers.

We dispatched a messenger to both these gentlemen notifying them of our arrival and requesting them to call upon us at the hotel, which in due time they did.

We then stated to them the object of our visit and requested that they furnish us with information, clinical histories, temperature observations, etc., of the cases under their charge. The information thus elicited was very meagre, owing to the fact that no notes had

been kept of the cases, no record of temperature or pulse kept and no observations of any kind recorded. Beyond the statement of both these gentlemen that the cases were all cases of "bilious fever of a mild type," and that with the exception of the two who had died, all were well and going about, the result of our interview was, to say the least, very unsatisfactory to us, and lead us to ask the attending physician to permit us to see the cases, accompanied by them. It being now late (10 P. M.), the next morning at 7 o'clock was appointed as the time for our investigation.

During the night Dr. T. S. Scales, Health Officer of the city of Mobile, Ala., had arrived, bent upon the same mission as ourselves, and accompanied by Drs. Lemon and Maybin we (Drs. Holt, Scales and myself) were driven to the infected locality, a small settlement just outside of the town of Biloxi proper, and opposite the shrimp canning establishment of Messrs. Lopez, Dunbar & Co.

We shall just here, and at once, dismiss any further consideration of this canning establishment, as it had no part as a factor in the production of the disease. It was in as clean a condition as an establishment of this kind could well be, had been in operation (after a period of idleness) only a few days, and even if there were (which we did not find) decaying shrimps loosely thrown about, this would have been more likely to have produced a disease of an entirely different type, which would have in all human probability afflicted the employes in the factory rather than to have gone outside and attacked two families of whom not a single individual was at the time employed therein.

Arriving at the house of a Mr. Cox, where the first case of sickness was said to have occurred, we found the entire family at home and carefully questioned each one old enough to answer intelligently. We gained the following information which is a verbatim copy of notes taken by me at the time in the presence of Drs. Lemon, Maybin, Scales and Holt.

The following are notes of

#### CASES IN THE COX HOUSE.

1. Lofton Cox—Age 14 years. Taken sick Wednesday, August 18, with chill, followed by fever which lasted three days. Headache, pain in back and limbs, nausea but no vomiting. Temperature about 100. (Dr. Lemon.) Convalescent.

2. Cornelia Cox—Age 15 years. Taken sick on Tuesday, August 24. Fever lasted three days; nausea and vomiting. Vomited matter said to have been bile and mucus. After passing two days in calm stage with no fever, she died on Sunday, August 29. Parent states that she lay in a semi-comatose condition, but could be aroused by the doctor at his visits.

3. Mrs. Cox. Taken sick on Wednesday, 25th. Slight chill, followed by fever which lasted two days. Still very weak and prostrated. She is about eight months pregnant.

4. Annie Cox—Age 11 years. Taken sick on Wednesday, August 25th. Not a high fever, but sufficient to keep her in bed two days. Convalescent.

5. Laura Cox—Age 6 years. Taken sick on Thursday. In bed one day. Is now well.

6. Mr. Cox. Was taken sick on Wednesday, August 25th in the evening. Light chill, severe headache, sick stomach, but no vomiting. Dr. Lemon says temperature was about 100, and that fever lasted but one day. Mr. Cox is still very weak and has not been able to go out of the house. No jaundice, but eyes still slightly injected.

This family came to Biloxi last fall and have been living in this house ever since, being employed off and on at the canning establishment.

#### CASES IN THE HOCKLEY HOUSE.

The house occupied by the Hockley family is about twenty-five yards east of the Cox house.

1. Mrs. Hockley. Was taken sick on Monday, August 23d. Woke up with a chill at 6 A. M., fever followed, lasting three days. Had headache, pain in back and limbs, nausea and vomiting of bilious matter. Mrs. Hockley is still in bed at the time of our visit, September 1, and expresses herself as feeling very weak and prostrated. Pulse 60, slight jaundice. Tongue clear and red.

2. Mr. Rhodes, brother-in-law of Mrs. Hockley was taken sick on Wednesday, 25th, at 1 P. M. No chill. Fever, headache and pain in back and limbs. Although the fever was said to have lasted but twenty-four hours, we found Mr. Rhodes in bed, saying he felt weak and prostrated. Slightly jaundiced. During illness had vomited quantities of mucus and bile.

3. Mrs. Rhodes. Taken sick on Wednesday 25th, at 11 P. M. Had no chill, but complained of violent headache. Said to have fever two days, nausea and vomiting. Delirious. Had two convulsions, threw up black vomit and blood, and died on Sunday at 11 A. M. Jaundiced after death and ecchymotic patches about face and neck.

4. Isabella Hockley—Four years old. Taken sick on Thursday at 11 A. M. Fever lasted about thirty hours. Was still in bed when we saw her September 1st, slightly jaundiced, tongue red and pointed, pulse 70.

Eleventh case. Mrs. Elder. Taken sick during the night between Tuesday and Wednesday, August 25. Saw her at 10 A. M. She stated that she had waked up at about 4 A. M., feeling chilly, headache, pain in back and limbs; nausea. Had vomited before our visit, about 6 A. M., a quantity of watery substance, green in color (bile). She

stated that she had visited the Cox house Saturday and again on Sunday after the Cox child had died. Present condition (September 1, 10 A. M.): pulse, 100; temperature, 100.6°. No epigastric tenderness. Face slightly flushed, circulation sluggish. Pulse gaseous. Eyes glistening.

The report of Dr. W. H. Watkins, sanitary inspector of the Louisiana Board of Health, who had been sent to Biloxi, subsequently furnished, shows the following as the course of the disease in this case :

"Dr. Lemon states that on September 2d, Mrs. Elder's temperature reached 104."

Dr. Watkins' observations :

"September 3, 5 P. M., temperature, 102.4; pulse, 100.

"September 4, 9 A. M., temperature, 100.6; pulse, 80.

"September 4, 5 P. M., temperature, 101.6; pulse, 80.

"September 5, 9 A. M., temperature, 99.4; pulse, 73.

"No further observations taken."

After viewing the cases as above, and on our return to the hotel, Drs. Scales, Holt and myself, after due deliberation, formulated the following, which was telegraphed to both New Orleans and Mobile, and was subsequently given to the Associated Press :

"BILOXI, MISS., *September 1, 1886.*

"We, the undersigned, have made a thorough examination of the seven convalescents, also of one patient now ill, and have obtained the clinical histories of the two persons who died last Sunday, August 29th. The sum of evidence indicates yellow fever as the cause of illness."

Of the methods of sanitation, immediately instituted by the co-operation of the State Boards of Health of Mississippi and Louisiana and the thorough stamping out of the disease, I shall not speak here, as this has already been set forth in the able and complete report published by Dr. Joseph Holt.

I have so far given the simple, plain, unvarnished facts as they presented themselves to us.

Seven more cases occurred within the two days immediately following our visit, and all in the same vicinity, two of which were in the Cox House, and one in the house of Cox's brother, a short distance away (400 yards).

Subsequent to our return to New Orleans, Dr. John Godfrey, of the marine hospital service, arrived in Biloxi, and after remaining four days, submitted the following to his superior, Surgeon-General Hamilton :

"I reached Biloxi on the morning of the 3d, and left at 6 A. M., September 7. Nine persons had been taken sick previous to my arrival. Two of these had died and the rest had recovered.



"These nine cases, and that of one other, Mrs. Elder, sick at the time, were those upon which the Louisiana State Board of Health based its verdict of yellow fever.

"They all lived in the infected district, a narrow tongue of land, with the bay in front and a slough, sometimes wet, sometimes dry, in the rear. Their quarters were from fifty to two hundred yards from the shrimp canning factory, and all were in an extremely unclean state."

(See report of Inspector.)

"This inspector, a man of competence and reliability, was heard to say that he took from these quarters more filthy material than he could get from half a square in New Orleans, which expresses all that need be said on that subject.

"The water-closets and wells were significantly near together. The latter were from eight to twelve feet deep, oftener eight than twelve.

"The shrimp offal was presumptively thrown over at the end of the wharf, but at times it was dropped over the sides in large quantities, near the factory, and was there found and disinfected in large heaps by the inspectors.

"While the factory was in operation shrimps were constantly thrown through the cracks of the platform and factory floor, where they were left to accumulate under the latter. They reached in places from the ground to the floor, a distance of several feet.

"Considering that no live thing decomposes sooner and smells worse after death than shrimp, it would be strange if sickness did not develop in that neighborhood, or, having developed, was not modified by the surroundings.

"I am not of the opinion, however, that the factory played an important part in causing the sickness. Several years ago Dr. Champlin treated cases of similar character in the same district, occurring about September 1, for more than one season. Last September Dr. Aldrich had between fifteen and twenty cases of the same kind.

"As nearly as could be ascertained eight persons had fever when I reached Biloxi, to wit: three in the infected district, one about three hundred yards, one about six hundred yards, and three about a mile therefrom. One case developed on the morning of his arrival, at 10 o'clock. This case and all the others had recovered before I left Biloxi, excepting Mrs. Elder, who was taken sick on the 1st of September, was five months enceinte, and miscarried on the 6th inst., about noon.

"All the patients were treated with calomel and quinine, took beef broth, chicken soup, bread and coffee. Had slight nausea, sometimes vomited greenish matter. Had no yellowness of gums, skin or conjunctiva.

"Had no suppression of urine and albumen in only one. They were

allowed to get up and walk from room to room. Some had remissions and others had absolute intermission.

"On the morning of the 4th the temperature of all ranged from 101 F. down to normal. I requested one attending physician to withhold quinine in all his cases at the evening visit. In every instance but one the temperature had risen from one to three degrees.

"With these clinical facts before me, and with the additional fact that nearly a hundred operatives were at the factory in the "infected district" daily, from morning till night, more than two-thirds of them—men, women and children—going to their homes in another part of the town, and all remaining perfectly healthy, it would have been a medical mistake for me to have recognized yellow fever.

"As to the work of Doctors Holt, Scales and Salomon, I have only to say that I was not able to elicit information from the convalescents tallying in all respects with theirs.

"For instance, all declared most positively that there was no yellowness of the skin. As to Mrs. Rhodes, who died, her husband told me that she had never been well since having a baby over a year previously, and that since last November she had been barely able to get about her work. There was no suspicion of black vomit except in her case. She died in convulsions. Those present differ. Some say that she drank claret and vomited just before dying. The others, that she spilled it on the sheet in the act of drinking.

"Referring only to those that were sick when seen, I am satisfied that they had malarial fever, modified by bad water, by domestic insanitation, and, possibly, by the constant stench of putrefying shrimp.

"Perhaps it is possible that the first batch of nine cases could have had yellow fever, and the next fever have been caused by malaria, but it is, so far, without the domain of probability that few medical men could be brought to believe it."

A laborious, carefully-prepared and convincing (!) report. Convincing, when we consider that the "quarters" and surroundings of these people "were in an extremely unclean state." Granted. But has it ever been shown that accumulated garbage gives rise to malarial fever? Does contaminated well water (which it is stated upon equally good authority these people did not drink) ever give rise to malarial fever of the bilious remittent type? Is it not more probable that such factors would have produced a disease of an acute infectious character, even admitting (which I do not) that they had anything whatever to do in originating the pestilence under consideration? Or can it be that decomposing fish (shrimp) will produce malarial fever or "modify" it into a fever of "one paroxysm." If any of these mentioned factors do, or are claimed to produce the malarial poison I, for one, have yet to learn it.

The report is further convincing in the fact that Dr. Godfrey states in the beginning that "nine persons had been taken sick previous

his arrival," and further on states that "eight persons were sick when he reached Biloxi." These eight added to the ten cases before September 1st make eighteen, which does not tally with the nine as stated.

Dr. Godfrey states that "on the morning of September 4th the temperature of all ranged from 101 down to normal."

The clinical notes of Dr. Watkins show the following:

Mrs. Foreditch, September 4th, temperature ranged from 101 to 101.8.

Ella Williams, September 4th, temperature ranged from 101 to 101.6.

Isabella Cox, September 4th, temperature ranged from 99 to 102.1.

Ella Cox, September 4th, temperature 102.

But even admitting that Dr. Godfrey is right and Dr. Watkins is wrong, it must be remembered that the 4th of September was the third or fourth days of the cases seen by him, when we expect to find a lowering of temperature in yellow fever, and as a rule always do find it.

Dr. Godfrey lays particular stress upon the fact that nearly a hundred operatives were at the factory daily from the morning till night and that none of them contracted the disease, and adduces this as his most potent reason for not diagnosing yellow fever.

Now, when it is shown that this factory played no part in the production of the disease (as before stated), that the disease was in the houses of people living outside of the factory, and that the factory employes were not brought into contact with the sick, it can be easily understood that at the outbreak of a disease which was speedily controlled, these employes escaped the infection.

Dr. Godfrey repeats the fiction that the vomited matter on the sheets upon which Mrs. Rhodes lay was produced by wine which she had taken. Had the doctor seen the sheets covered with what appeared to the eye to be characteristic black vomit, and other stains of pure blood which had been vomited, he would not have been so ready to believe this imposition upon his credulity.

The brother of Mrs. Rhodes, who nursed her throughout her illness, was asked by me, specifically: "What kind of wine did your sister drink which, having been vomited by her, could have produced stains like this?" He, without hesitation, replied: "She drank no wine at all, Doctor. She took nothing but the medicine Dr. Lemmon gave her."

The report also states that there was in the cases seen by Dr. Godfrey, "no yellowness of gums, skin or complexion," and that "all declared most positively that there was no yellowness of the skin" in the two cases which died.

As to this statement, the persons themselves differ in the information given to Dr. Godfrey and to us.

Mr. Cox stated to us that his daughter was yellow after death. Mr. Rhodes stated the same in regard to his wife, and several other per-

sons who had seen the dead bodies voluntarily made the same statement to us. In this, as in other important points, Dr. Godfrey was evidently misinformed after it was learned that this was an important point in the determination of the cause of death. While Dr. Godfrey is satisfied that the cases he saw were malarial fever, the opinion is qualified by the statement that it was a malarial fever, "modified by bad water, by domestic insanitation and *possibly by the constant stench of decaying shrimp.*"

Modified how? In what manner? Is it possible that malarial fever can be so modified by these surroundings as to produce a fever of a type such as shown? A fever which, after lasting three days, will allow a person to *pass into a calm stage*, and either go into a *semi-comatose condition and die or have convulsions, throw up black vomit and die*? It is hardly within the domain of unprejudiced belief, and "*few medical men could be brought to believe it.*"

October 1, 1886.

Dr. Conn, of New Hampshire, thought this paper brought up the question of inter-State notification, and moved that the paper be laid on the table until Dr. Bryce had made his report. Motion carried.

Dr. Bryce's paper was assigned for the evening.

The following questions were then considered :

"2. Upon what basis, on common agreement, may State boards meet that are empowered to administer and enforce acts to regulate medical practice, and indirectly education, in the several States?

"Is it feasible and wise for them to unite in a uniform policy toward medical colleges, and the establishment of a common standard of recognition of such schools, in regard to length and number of courses of study required for graduation, preliminary requirements, percentage of graduates to matriculates, and other details of collegiate medical instruction?"

Discussion opened with some remarks by Dr. J. H. Rauch, Secretary State Board of Health, Illinois, as follows :

A categorical reply to these questions would have little practical value, in view of the fact that, although growing, it can not yet be said that the sentiment is unanimously in favor of empowering State Boards of Health "to administer and enforce acts to regulate medical practice." Instead of such a reply it will be more profitable to consider, first, the relation of health boards to the subject of medical practice, which, of necessity, involves the subject of medical education; and next, to consider the practical results which have been accomplished by such boards where they have been entrusted with the power and authority to influence these subjects.

In a broad sense, the State Board of Health is created and maintained for the conservation of health and life. Limited in the number of members, and with its duties largely devolved, as a rule, upon a single executive officer, it must be obvious that the work to this end

which such a board can actually do of itself sinks into relative insignificance when compared with what may be accomplished by the aid of the large body of the medical profession. It is not alone that the profession is most directly and intimately concerned with the interests of health and life, but it is from the profession that the ranks of sanitarians are mainly recruited, and it is to the profession that sanitary science owes its very existence. Whatever, then, the Board of Health may do toward the suppression of quackery; toward improving the status of the individual practitioner; toward the fostering and encouragement of a higher standard of medical education and of the requirements for admission to the profession, must result in promoting the interests of health and life by developing the most valuable and effective working force whereby to further the purposes for which boards of health are established.

The desirability of these objects being granted, it follows that State boards may be properly and legitimately "empowered to administer and enforce acts to regulate medical practice," and that every well-considered step—by which the standing of medical schools may be determined; by which the schools may be stimulated and aided to exact higher qualifications, both for admission to their classes and for graduation; by which the ignorant and unworthy may be excluded from the profession, and by which unprofessional and dishonorable conduct may be legally punished—is, in its essence, a sanitary measure for the protection of life and health.

While this consideration touches only the benefit which the board may receive from the profession, it can, I think, be fairly claimed that the relation is reciprocal. The necessity for the statutory regulation of the practice of medicine is shown by the fact that efforts to that end have been made continuously ever since the earliest settlement of this country, and before that time in Great Britain as early as 1422. In an address before the section in *State Medicine* at the last session of the American Medical Association I have shown the authority upon which the exercise of this power by the State is founded, and have traced the growth of medical practice laws in the several States down to the present time. It is there shown that there are now thirty-three States and territories in the Union which have laws in existence for the regulation of the practice of medicine. But these laws differ widely, not only in their provisions but in their modes of administration. For example: The medical practice act of California is substantially the same as that of Illinois, of West Virginia, of Missouri, of Minnesota and of Iowa, as to the requirements entitling physicians to admission to practice, to the verification of diplomas from "legally-chartered medical institutions in good standing," the record of certificates, examination of non-graduates, etc. But in that State the administration of the act is confided to examining boards appointed from each of the three State medical societies—the regular, the homœopa-

thic and the eclectic. A candidate rejected by one board may apply to another, and Dr. Hatch, when Secretary of the California State Board of Health, only recorded a natural result in his communication to the Illinois State Board of Health when he wrote: "It is known that many have been licensed who are totally and notoriously unqualified to practice medicine." A similar condition under a similar law obtained in Kansas until the law was declared unconstitutional on the ground that the examiners being State officers should have been appointed by the Governor instead of by the medical societies. In Texas even greater powers were conferred upon examining boards, appointed in each judicial district by the presiding judges; but under the Penal Code of 1879 any graduate of a chartered medical college, without regard to the standing or character of such college, is entitled to practice by merely registering his "diploma" in the office of a county or district clerk. This was also formerly the case in Missouri, and is to-day in Indiana, Michigan and Wisconsin under substantially similar laws.

I will not stop to discuss at length the effect of such laws. It must be obvious that their practical result is to stimulate the "diploma mills"—(the "legally chartered medical institutions" of the baser sort)—and to antagonize the efforts of the profession and of the reputable colleges to elevate the standard of medical education. The commercial consideration presents a constant temptation, not successfully resisted even by some of the metropolitan schools—to relax the conditions of admission and of graduation; and "legally chartered medical institutions" are readily established, or at least organized, under existing laws in most States. Even in Illinois a charter for an institution empowered to confer degrees in medicine and to issue diplomas may be obtained upon compliance with very simple conditions and the payment of five or six dollars.

Such diplomas have, however, lost much of the artificial value and importance formerly attached to them, not only in Illinois, but throughout the country. One of the most important results of the administration of the medical practice acts of the past eight or nine years is, indeed, the relegation of the diploma to its legitimate place in the estimation of the profession and the public. In the very first year of its existence the Illinois board took action which led to a judicial decision in October, 1878, which clearly defined the diploma as conferring no legal rights or powers whatsoever, but as being mere documentary evidence of a degree conferred, and, in itself, establishing no fixed standard of professional knowledge—since, not only do different institutions have different standards, but, in the language of the court, "the same institution does not apply the same standard to all its students." Hence the necessity of creating some authority "to have charge of medical practice and medical practitioners in Illinois, and surveillance of the professional conduct of physicians in the interests

of the health and life of the citizens of the State." That decision also elucidated and emphasized a fundamental principle which had been largely lost sight of, to wit: That the right to practice medicine is not a constitutional privilege, nor a property, nor a contract; but is a mere statutory privilege, subject to the control of the Legislature, and entirely independent of a diploma. It also drew a broad and sharp distinction between criminal conduct and "unprofessional and dishonorable conduct," in the former of which, "as a citizen, the physician is, with every other citizen, answerable to the criminal laws, and as an alleged criminal is liable to be arraigned before the courts," which latter, however, can not interfere in matters of professional morality, honesty and uprightness. But since these latter are of the essence of the qualifications of a calling which sustains the most sacred and intimate relations with the individual and the family, the Legislature has recognized the importance of establishing a tribunal to be the judge of "unprofessional and dishonorable conduct," and has clothed that tribunal with power to exclude from the statutory privilege those guilty of such conduct by refusing or revoking the certificate which entitles them to practice. The court says: "It is only as a physician that he is liable to have his professional conduct inquired into and brought before the State Board of Health. The term unprofessional is therefore far wider than criminal. Many acts would be unprofessional that were not criminal; some acts that were criminal might not be esteemed unprofessional. What is professional conduct can only be determined by bringing the act to the professional criterion, and who so well qualified to judge of the proper professional criterion for the medical profession as a board constituted as the bills shows this board to be? The 'unprofessional' conduct which authorizes the board to exclude a physician from the profession does not, therefore, mean necessarily criminal or immoral acts, but such conduct as is inconsistent with the honorable practice of the profession; and in judging of such conduct the board of health has a wide discretion, and in its exercise courts ought not to interfere with it."

It is, indeed, a monstrous doctrine which holds that a piece of parchment setting forth that at a certain period of the possessor's life he was a man of honor and probity and skilled in certain arts and knowledge, should operate forever after to shield him from the just consequences of his departure from that high and honorable professional standard, or of the prostitution of his medical skill and attainments to base and ignoble ends. And not less to be deprecated is the legislative neglect or indifference which permits the possessor of such a parchment to engage in the practice of medicine without regard to his moral status or to the methods by which he seeks to gain the confidence of the sick and afflicted—the most credulous and the most helpless of all classes of the community.

The standard of requirements for graduation and the course and

methods of instruction may be as admirable and as thorough as those enforced and exacted here in the Dominion, but without some legislative provision which shall continue that high standard after graduation and throughout the entire professional life, there is nothing to restrain the quack and the charlatan armed with a diploma—there is no effective mode of punishing or preventing unprofessional and dishonorable conduct, or of protecting the public from its consequences.

In some of our States—Alabama, Mississippi, North Carolina and Virginia—the diploma is, as a matter of fact, entirely ignored, and the right to practice must be established before various examining bodies. There is much to be said in favor of the theory upon which such methods are based as to the mode of entrance into practice—and possibly, if the custom were uniform in all the States, it might be found adequate. It is not too much, however, to claim that the action of the State Boards of Health of Illinois, West Virginia, Missouri and Minnesota—empowered as these are to refuse certificates entitling to practice to those guilty of unprofessional and dishonorable conduct and to revoke certificates for like cause—has already aided the efforts of the profession toward a higher medical education and status in a greater degree than any other agency. Iowa has also recently joined the States mentioned, and the results thus far achieved are a sufficient demonstration of the wisdom and feasibility of confiding the regulation of medical practice to these bodies. For my own State, I do not hesitate to say that the profession is in better shape than that of any other State in the Union of equal proportion, and considering the character and comparative newness of the population.

As germane to the scope and purport of the questions under discussion, I beg to submit some passages from a paper presented by Dr. H. A. Johnson, of Chicago, to the American Medical Association in 1879, on the regulation of medical practice—"The Regulation of Medical Practice by State Boards of Health, as Exemplified by the Execution of the Law in Illinois :"

"The Legislature of Illinois, at its session of 1877, passed a bill creating a State Board of Health, and at the same session an act to regulate the practice of medicine in the State of Illinois. The duty of carrying into execution this last law was committed to the State Board of Health. The bill provides that every person practicing medicine in any of its departments shall possess the qualifications required by this act. If a graduate of medicine, he shall present his diploma to the State Board of Health. If the diploma is found genuine, and if the person named therein be the person claiming and presenting the same, the State Board of Health shall issue a certificate to that effect, and such diploma and certificate shall be conclusive as to the right of the lawful holder of the same to practice medicine in this State. If not a graduate, he shall present himself before said board and submit himself to such examination as the board shall require, and if the



examination be satisfactory the said board shall issue its certificate in accordance with the facts, and the lawful holder of the certificate shall be entitled to all the rights and privileges herein mentioned; the lawful holder of a diploma shall be required to make an affidavit that he is the legal possessor of the same, and that he is the person therein named. These certificates, whether issued to graduates, or upon examination, shall be recorded in the office of the clerk of the county in which the holder resides. The register of the county clerk shall be open to public inspection.

"The examination of those not graduates may be wholly or partly in writing, and sufficiently strict to test the qualifications of the candidate as a practitioner. The board has power to refuse certificates for unprofessional or dishonorable conduct, and to revoke certificates for like cause. The law requires the board to grant certificates to the holders of diplomas from legally chartered medical institutions in good standing, giving to the board the power to determine what colleges are in good standing. It also defines a practitioner of medicine to be one who shall profess publicly to be a physician and to prescribe for the sick, or who shall append to his name the letters 'M. D.' Itinerant vendors of any drug, or application for the treatment of the sick, or cure of disease, are required to pay a license of \$100 per month. The punishment for any violation of the act is a fine of not less than \$50 nor more than \$500, or by imprisonment in the county jail for not less than one month or more than a year, or both. The provisions of the act do not apply to persons who have been in the practice of medicine in the State of Illinois ten years or more.

"This law went into effect July 1, 1877. The board organized and soon after July began its work. Its utility was a matter upon which the profession was by no means a unit. By very many physicians it was thought inexpedient and perhaps impossible to carry out its provisions so as to better to any appreciable degree the conditions and qualifications of those engaged in practice. The greatest difficulty was apprehended from the apparently conflicting schools of medicine. It was thought impossible to form a board that should work well together and which should have the confidence of those holding these widely different theories upon therapeutics. For these reasons the formation of the board and its action was on the part of very many waited for with indifference or distrust. The Governor, in making the appointments, recognizing the existing facts, appointed three physicians, called 'regular,' for the want of a better term, one homeopath, one eclectic, and two who were not physicians but who were men deservedly held in high esteem as thoroughly accomplished and scientific gentlemen, both of them at the head of prominent institutions of learning. It was thus a mixed board. In the prosecution of the work—the regulation of the practice of medicine—there were found to be seven grades or classes of doctors.

"1. Those who hold diplomas from legally organized medical colleges in good standing, that is, having the confidence of the profession at large.

"2. Those holding diplomas from colleges not recognized as in good standing, either for the reason that the curriculum is too short, too narrow, and the work of teaching too carelessly or imperfectly done, or because they are not teaching bodies at all, though chartered schools, their function being the sale of diplomas. As medical colleges they are myths; as business organizations they have only an indifferent success.

"3. Midwives—women engaged in that special department of practice.

"4. Those holding diplomas that do not belong to them, obtained by inheritance, by borrowing, or by theft. Among this class some change the name of the diplomas, while others, sacredly respecting the venerable document, issued perhaps before they were born, only clumsily mutilate its date and change their own name so as to accommodate the holder to the diploma. Forty-one practitioners were found under assumed names.

"5. Non-holders of diplomas who had been in practice ten years or more in Illinois.

"6. Non-holders of diplomas who had not been in practice ten years in Illinois.

"7. A class of itinerants going from town to town advertising in advance that they will work their wonders at such a place, on such days of such month, etc.

"The work of the board had to do with this heterogeneous mass. It commenced first by inviting physicians holding diplomas to present them for verification; second, by holding sessions at different points in the State where those not graduates could present themselves for examination. These examinations have been conducted in writing by different members of the board, and, from the papers seen by the writer, are judged to have been practical and thorough. The fact that not one-half of those presenting themselves passed justifies the belief that in this respect the board has done its duty.

"The report of the board presented to the Governor in December, 1878, gives in detail the results of this work up to that date."

[For Dr. Johnson's figures then given I substitute those from the last annual report, that for 1885.]

"There have been issued to holders of diplomas from schools deemed by the board in good standing 7,223 certificates; upon affidavits from non-graduates of ten years' practice within the State (prior to July 1, 1877), 1,141; upon examination of non-graduates of less than ten years' standing, 224; being a total of 8,588. Certificates were also issued to 951 midwives, making a grand total of certificates of 9,539.

"The effect of this law and its execution has, I think, been much more satisfactory both to the profession and the public than its most ardent supporters dared to hope. The attention of the non-professional public has been called to the importance of knowledge as a qualification for practice. A general interest has been awakened upon this subject which in its influence will lead to a more just estimate of the physician and a better understanding of the responsibilities of his office.

"The board is invested with authority to determine what constitutes a medical college in good standing. At a meeting held in Cairo, November 5, 1877, the following resolutions were adopted :

"*Resolved*, That on and after July 1, 1878, the board will not consider any school in good standing which holds two graduating courses in one year.

"*Resolved*, That on and after July 1, 1878, the board will not recognize the diplomas of any medical school which does not require of its candidates for graduation the actual attendance on at least two full courses of lectures with an interval of six months or more between each course.'

"These resolutions make it impossible for the graduates of schools which give two graduating courses in each year, or which do not require an interval of at least six months between each course, to practice medicine in any of its departments in the State of Illinois. This action has led to the extension of the lecture term and the abandonment of the two-term system in one of the medical colleges of Chicago—the 'eclectic.' It is believed that this action has had some influence on medical colleges outside of the State. In other words, the action of the board under the law has been the means of bettering a certain class of medical institutions, whose status in the estimation of the profession was somewhat equivocal. The execution of the law has also given encouragement to the legally qualified physicians. It has secured for them more honorable association, and has given to them the means of certifying to the public their own claims to the confidence of the people."

The following is the text of schedule of minimum requirements:

I. *Conditions of admission to lecture courses.*—1. Credible certificate of good moral standing. 2. Diploma of graduation from a good literary and scientific college, or high school or a first grade teacher's certificate. Lacking these—a thorough examination in the branches of a good English education, including mathematics, English composition, and elementary physics and natural philosophy.

II. *Branches of medical science to be included in the course of instruction.*—1. Anatomy. 2. Physiology. 3. Chemistry. 4. Materia Medica and Therapeutics. 5. Theory and Practice of Medicine. 6. Pathology. 7. Surgery. 8. Obstetrics and Gynecology. 9. Hygiene. 10. Medical Jurisprudence.

III. *Length of regular graduating courses.*—1. The time occupied in the regular courses or sessions from which students are graduated shall not be less than five months, or twenty weeks, each. 2. Two full courses of lectures, not within one and the same year of time, shall be required for graduation with the degree of Doctor of Medicine.

IV. *Attendance and examination or quizzes.*—1. Regular attendance during the entire lecture course shall be required, allowance being made only for absence occasioned by the student's sickness, such absences not to exceed twenty per centum of the course. 2. Regular examinations or quizzes to be made by each lecturer or professor daily, or at least twice each week. 3. Final examinations on all branches to be conducted, when practicable, by competent examiners other than the professors in each branch.

V. *Dissection, clinics and hospital attendance.*—1. Each student shall have dissected during two courses. 2. Attendance during at least two terms of clinical and hospital instruction shall be required.

VI. *Time of professional studies.*—This shall not be less than three full years before graduation, including the time spent with a preceptor, and attendance upon lectures or at clinics and hospital.

VII. *Instruction.*—The college must show that it has a sufficient and competent corps of instructors, and the necessary facilities for teaching, dissections, clinics, etc.

Diplomas of colleges whose educational requirements and methods of instruction fall short of the above schedule are not recognized as entitling their possessors to certificates authorizing them to practice in the State of Illinois. (This does not apply to diplomas issued prior to the sessions of 1883-84, but only to those issued at the close of said sessions and subsequently.) The only way in which holders of such diplomas may legally enter upon practice in the State is by passing a satisfactory examination before the board on the branches or subjects of the schedule omitted.

This schedule is, therefore, the test of the "good standing" of a medical college in Illinois. Only colleges which come up to this minimum standard are accounted as in "good standing." To determine the status of any given institution, it is only necessary to compare the summary of the institution set forth in the annual reports of the board on medical education with the above schedule.

As showing the increasing extent to which the schedule is complied with, the following comparisons are of interest: There are now 114 colleges which exact an educational requirement as a condition of matriculation; in the first report there were only forty-two. Attendance on three or more lecture-courses before graduation is now required by forty-one colleges, as against twenty-two heretofore; and provision is made for a three or four-year graded course by forty-eight others. Hygiene is now taught in one hundred and ten colleges, and medical jurisprudence in the same number, as against 42 and 61,

respectively, heretofore. The average duration of lecture terms has increased from 23.5 weeks to 23.8; nine more colleges have lecture terms of five months or over, and thirteen more have terms of six months or over, as compared with the sessions of 1882-83. These changes have all been made in the medical colleges of the United States, no material alteration in the Canadian schools having taken place in these respects.

Fears have been entertained that a law such as that placed upon the statutes of Illinois could not be executed; that it must remain a dead letter; that it would be impossible to hunt up and investigate and determine the status of the thousands of practitioners scattered from the lake to the river. This task is no doubt a difficult one and would be more so but for the existence of the State Board of Health and the provisions of the organic law requiring the registration of practitioners as a part of the machinery necessary for securing the vital statistics of the State. The State Board requires a registration in the office of the county clerk of each county of every person practicing medicine of midwifery. The neglect of such registration subjects the person so neglecting to the penalty for the violation of the law regulating the practice of medicine. It will be easily seen that if a few only of the practitioners become registered it will be for their interest to determine the fact that all others are also registered. In this way every practitioner who has complied with the law is made an aid to the State Board in the execution of its provisions. It has been found to be practically the fact that in many counties not a single person is engaged in the practice of medicine who has not complied with the law, and this not so much through the immediate intervention of the State Board as through the action of the local physicians. A suspicion that a neighboring or competing practitioner has not complied with this law, or that he is disqualified by law, leads at once to an investigation, and, in case of the neglect or refusal to comply or qualify, to prosecution. The authority of the board to revoke licenses has been tested in the courts and so far has been sustained. Dr. Johnson concludes as follows:

"In view of all these facts, it is quite evident, I think, that it is possible to regulate the practice of medicine and to vastly improve its condition, and that this can be done and probably best done by State Boards Health.

"In conclusion, the writer begs leave to suggest that it is the duty of the State to protect its citizens from the injuries they may sustain from the practice of incompetent physicians and surgeons as well as from any other source of danger to public health. The mode in which this protection can be best extended is one upon which there may be differences of opinion; in fact, there may be different modes equally efficient. But that adopted by the State of Illinois, if it could be carried still further and made more complete in this investigation of the status of every practitioner of medicine, would, as it seems to me, be

amply sufficient. A diploma from any medical college ought not to be accepted of itself as the evidence of a qualification for the discharge of the duties of the profession. It is true a board invested with the power of discriminating like that of this State perhaps may be trusted to determine what colleges do give their graduates an education qualifying them for these responsible possibilities; but practically it is found very difficult to make such discrimination. An examination should be held of every practitioner of medicine; that examination, if successful, should entitle him to a license to practice. The colleges would then be relegated to their legitimate places as teaching bodies, and not as bodies empowered to give authority to practice. The colleges that have the best teachers, whose students are most successful in passing the examination, and which are therefore evidently rendering to the community the highest services, would become the most popular, and would justly receive at the hands of the public that recognition which they deserve."

It would occupy too much of the time which the conference can devote to the consideration of these questions to discuss other points. Sufficient has probably been said to indicate the grounds upon which I would base my affirmative answers.

If it is desirable that one State Board should establish a given policy toward medical colleges and medical education, there is no reason apparent why all such boards similarly constituted and acting under similar authority should not unite in a uniform policy. Such uniformity, the result of a consensus of a number of boards would strengthen the action and influence of each individual board, giving it, practically, the moral force of the entire number.

As to the feasibility of such action, that is a matter which has already settled itself in all but mere formal expression. The State Boards of the five States mentioned are already united in an almost perfect concert of action.

Dr. Hewitt said the State Board of Health of Minnesota was in no way responsible for medical examinations, and that the examining board had no connection with the State Board of Health.

Dr. C. W. Covernton thought that in Canada the examinations were very thorough.

Dr. Rauch said that so far as Canada was concerned, the medical education, before the degree of M. D. is granted, or before any degree is granted, is much more thorough than in the United States. It was hoped soon to have the medical education in the United States, if not as good as in Canada, at least nearly so.

Dr. William Canniff, of Toronto, thought some measures should be adopted to protect the profession against quacks.

The following propositions from Kentucky:

"What have been the actual practical results secured, outside of large cities and towns, in preventing the spread of scarlet fever,

measles, diphtheria and typhoid fever? and how is the coöperation of the medical profession and general public best secured in such work?"

The discussion of three questions embraced therein was opened by Henry B. Baker, M. D., Secretary of the Michigan State Board of Health, who, after preliminary remarks, presented the following:

The Michigan State Board of Health was established in 1873. Late in that year the board issued a circular to physicians stating the duties of physicians and others under the law in dealing with "small-pox and other diseases dangerous to the public health;" also showing the relative danger to the public health from the various communicable diseases. The circular showed that scarlet fever caused more deaths by far than small-pox, and it was urged that if scarlet fever was properly restricted, the deaths from this disease might be greatly lessened. The circulars were distributed to the physicians throughout the State. From that time forward scarlet fever in Michigan has been treated by the State Board of Health as a dangerous communicable disease, and at present isolation and disinfection are generally enforced by local boards.

I submit a table (No. 1), in which the deaths from scarlet fever reported to the Secretary of State as having occurred in Michigan during the five years (1869-73) immediately preceding the organization of the State Board of Health, is compared with the eleven years 1874-84, since the Michigan board was established.

TABLE 1.

Deaths from scarlet fever, reported to the Secretary of State as having occurred in Michigan during the five years, 1869-73, compared with the eleven years, 1874-84; 1873 being the year, in the latter part of which the Michigan State Board of Health was established and began its work. Also a comparison of the three years, 1874-76, with the eight years, 1877-84; the document on the restriction and prevention of scarlet fever having been issued by the State Board of Health in 1877, and distributed each year since that date:

Years. (Five.)	Deaths.	Years. (Eleven)	Deaths.	Years. (Three.)	Deaths.	Years (Eight.)	Deaths.
1869, . . .	252	1874	440	1874	440	1877	404
1870, . . .	852	1875	423	1875	423	1878	429
1871, . . .	696	1876	399	1876	399	1879	418
1872, . . .	565	1877	404			1880	370
1873, . . .	580	1878	428			1881	383
		1879	418			1882	592
		1880	370			1883	673
		1881	383			1884	326
		1882	592				
		1883	673				
		1884	326				
Sums, . .	2,945	.....	4,857	.....	1,262	.....	3,586
Averages,	589	.....	442	.....	421	.....	449

In Table 1, I have also studied the effect of the circulation of a document giving detailed information relative to the restriction and pre-

vention of scarlet fever. Such a document was issued by the Michigan State Board of Health in 1877, and has been thoroughly distributed each year since. I have compared the three years, 1874-76, just before the document was issued with the eight years, 1877-84, since it was issued. Although the average number of deaths reported annually in the latter period is slightly greater than during the three years immediately preceding, partly because the eight-year period contains an epidemic year, there was not an increase but a decrease in the proportion of deaths to population. This is shown in the Exhibit No. 1, which allowance is made for the actual increase of population, and it is found that during the time of the distribution of the document there was a saving of sixty-four lives per year, or 512 lives during the eight years compared with the three years in which the State Board labored to prevent the spread of scarlet fever, but did not distribute a document containing full directions how to restrict the disease. By Exhibit 1 it will be seen that during the entire period since the organization of the State Board of Health, the average deaths per year were 2.1 per 10,000 inhabitants less than in the period previous to that time. The average annual population during the eleven years period is estimated from the population as stated in the Michigan manual to have been 1,609,023. This indicates a saving of 338 lives per year, or 3,718 lives saved from death from this one disease, during the first eleven years after the State Board of Health was established. (Statistics for 1885 and 1886 are not yet available.)



## EXHIBIT 1.

A comparison of the deaths from scarlet fever reported to the Secretary of State as having occurred in Michigan during the five years (1869-73), just preceding the organization of the State Board of Health, with the three years (1874-76) immediately succeeding its organization, and those three years (1874-76) with the eight years (1877-84), during which the document on restriction of scarlet fever was distributed; also, the five years (1869-73), just before the establishment of the Board, with the eight years (1877-84) during the use of the document; and finally a comparison of the five years (1869-73), just preceding the work of the Board, with the eleven years (1874-84) since the State Board of Health was established:

PERIODS OF TIME COMPARED.	Estimated aver- age population.	Average deaths reported per year.	Total reported deaths.	Average reported deaths per year per 10,000 in- habitants.	Decrease of deaths per year per 10- 000 inhabitants.	†Average decrease reported deaths per year.	†* Lives probably saved according to the reports.
{ 5 years, 1869-73, . .	1,215,220	589	2,945	4.85			
{ 3 years, 1874-76, . .	1,384,515	421	1,262	3.04	1.81	252	756
{ 3 years, 1874-76, . .	1,384,515	421	1,262	3.04			
{ 8 years, 1877-84, . .	1,689,988	449	3,595	2.66	.38	64	512
{ 5 years, 1869-73, . .	1,215,220	589	2,945	4.85			
{ 8 years, 1877-84, . .	1,689,988	449	3,595	2.66	2.19	370	2,961
{ 5 years, 1869-73, . .	1,215,220	589	2,945	4.85			
{ 11 years, 1874-84, . .	1,609,023	442	4,867	2.75	2.10	338	3,718

\* Probably not all deaths were reported before or since the organization of the board, consequently the saving is probably greater than is here shown.

† Allowing for increase of population.

In Table No. 1 it is seen that during the eleven years of the work of the State Board of Health, the deaths from scarlet fever, as reported to the Secretary of State, were reduced in the aggregate about one-fourth, notwithstanding the increase of population. Although this is an important reduction, Table No. 2 shows that small-pox was reduced about two-thirds. The greater success in restricting small-pox is probably due to the fact that for small-pox we have the additional advantage of vaccination in preventing and modifying the disease.

TABLE 2.

Deaths from small-pox reported to the Secretary of State as having occurred in Michigan during the five years, 1869-73, compared with the eleven years, 1874-84; 1873 being the year, in the latter part of which the Michigan State Board of Health began its work. Also a comparison of the four years, 1874-77, with the seven years, 1878-84; the document on the restriction and prevention of small-pox having been issued by the State Board of Health in 1875, and distributed each year since that date:

YEARS. (Five.)	Deaths.	YEARS. (Eleven.)	Deaths.	YEARS. (Four.)	Deaths.	YEARS. (Seven.)	Deaths.
1869, . . . . .	42	1874, . . . . .	18	1874, . . . . .	18	1878, . . . . .	6
1870, . . . . .	9	1875, . . . . .	26	1875, . . . . .	26	1879, . . . . .	6
1871, . . . . .	73	1876, . . . . .	76	1876, . . . . .	76	1880, . . . . .	3
1872, . . . . .	302	1877, . . . . .	102	1877, . . . . .	102	1881, . . . . .	82
1873, . . . . .	90	1878, . . . . .	6			1882, . . . . .	100
		1879, . . . . .	6			1883, . . . . .	5
		1880, . . . . .	3			1884, . . . . .	3
		1881, . . . . .	82				
		1882, . . . . .	100				
		1883, . . . . .	5				
		1884, . . . . .	3				
Sums, . . . . .	516	427	222	205			
Averages, . . . . .	103	39	56	29			

EXHIBIT 2.

A comparison of the deaths from small-pox reported to the Secretary of State as having occurred in Michigan during the five years (1869-73), preceding the organization of the State Board of Health, with the four years (1874-77) immediately succeeding its organization, and those four years (1874-77) with the seven years (1878-84), during which the document on the prevention of small-pox was distributed; also the five years (1869-73), just before the board was established, with the seven years (1878-84) during the use of the document; and finally a comparison of the five years (1869-73) just preceding the work of the board, with the eleven years (1874-84) since the State Board of Health was established:

PERIODS OF TIME COMPARED.	Estimated average population.	Average deaths re- ported per year.	Total reported deaths.	Average reported deaths per year per 100,000 inhabitants.	Decrease of deaths per year per 100,000 inhabitants.	† Average decrease of reported deaths per year.	*† Lives probably saved, according to the reports.
{ 5 years, 1869-73, . .	1,215,220	103	516	8.48	.. . . .	.. . . .	.. . . .
{ 4 years, 1874-77, . .	1,409,758	56	222	3.97	4.51	64	256
{ 4 years, 1874-77, . .	1,409,758	56	222	3.97	.. . . .	.. . . .	.. . . .
{ 7 years, 1878-84, . .	1,696,034	29	205	1.71	2.26	38	268
{ 5 years, 1869-73, . .	1,215,220	103	516	8.48	.. . . .	.. . . .	.. . . .
{ 7 years, 1878-84, . .	1,696,034	29	205	1.71	6.77	115	806
{ 5 years, 1869-73, . .	1,215,220	103	516	8.48	.. . . .	.. . . .	.. . . .
{ 11 years, 1874-84, . .	1,609,023	39	427	2.42	6.06	98	1,073

\* Probably not all deaths were reported before or since the organization of the board, consequently the saving is probably greater than is here shown.

† Allowing for increase of population.

In order to ascertain the advantage of the distribution of the "Document on the restriction and prevention of small-pox," I have made, in Exhibit No. 2, a comparison between the periods of restriction without the document and the period of restriction with the document; that is, a comparison of the period 1874-77 with the period 1878-84. This indicates that during the time of the circulation of that document there was saved an average of 38 lives per annum, or 266 lives during the seven-year period. The total number of deaths from small-pox reported to the Secretary of State during that period was 205, which was 31 less than half the number which would have been reported if the deaths from small-pox had continued at the same rate as during the four years just preceding the distribution of the document.

In Exhibit No. 2, it may be seen that during the entire period since the State Board of Health has been working, the average deaths from small-pox were 6.06 per 100,000 inhabitants, less than during the period of five years just before the establishment of the Board. This shows a savings of 98 lives per year, or 1,073 lives saved during the period of eleven years; that is, there were 1,073 less deaths from small-pox during this period than there would have been had the deaths continued at the same rate as before the work of the Board commenced.

Thus, from the two diseases, scarlet fever and small-pox, there is indicated by the statistics in the office of the Secretary of State to have been a saving of nearly 5,000 (4,791) lives in Michigan during the eleven years following the establishment of the State Board of Health.

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In my opinion, the coöperation of the medical profession can be and is best secured by educating the people who employ and pay physicians, so that the people will prefer the physician who acts for the prevention of disease rather than the one who does not so act. Public sentiment will then make coöperation easy. It is asking too much of the medical profession to ask physicians to go far in advance of public sentiment in efforts for preventing the spread of communicable diseases. Self preservation is as much a "first law of nature" to the medical profession as to other classes of human beings. It is fair to assume that, in the future as in the past, physicians will continue to lead in philanthropic work, especially in this branch of sanitary reform, but I consider it the duty of practical sanitarians—certainly the duty of all of us who are connected with State Boards of Health—to see to it that, so far as possible, public sentiment be constantly advanced so as to keep pace with the rapid progress in the medical profession. If we expect physicians to coöperate with us in efforts to prevent the spread of consumption, or any one of the diseases men-

tioned in the proposition, we must ourselves lead off, and allow them to coöperate, and not expect them to do all of the work.

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One of the best methods of securing the coöperation of the general public is the popular sanitary convention. Here scientific nomenclature is cast aside, and the truths of science are clothed with the language of the people. Here statistics became charged with the enthusiasm of the speaker, the inattentive become attentive, and the blind begin to see. Two or three such conventions are held in Michigan every year. At times very large audiences attend. They command a large amount of space in the local papers and in the daily press of the State, and after the convention 2,000 copies of the proceedings are printed and distributed among those people likely to read them. Papers have been read before these conventions by many of the most prominent ministers, lawyers, professors and doctors of the State.

Another way to compel the attention of the people is to take them when they are threatened with disease and death. For some time the Michigan State Board of Health has been in the habit of sending to those localities in the State where a dangerous communicable disease is known to exist, copies of a pamphlet on the restrictions and prevention of that particular disease. These pamphlets have been distributed among the neighbors of those sick with the disease, and have been pronounced by health officers "a great help in restricting the spread of the disease." But the educational effect of the distribution of these pamphlets in this manner—their effect in forming public sentiment favorable to the restriction and prevention of disease, is of even greater prospective importance than is the immediate result.

Dr. Abbott, of Massachusetts, did not want to say a word against the value of statistics, but it seemed to him that it was unfair to take the year 1872 for the purpose of comparison. That year throughout the whole of the United States was a very bad one for all sorts of disease, and particularly for small-pox, and he thought it was not right to select that year for comparison. A great deal could be accomplished by the compilation of statistics, but the tendency is to interpret too much from the figures themselves.

Dr. Hewitt said that if it was true that there had been a diminution in disease in Michigan since the organization of the State Board of Health, owing to the distribution of circulars and other documents, then there was a new means of prevention. He thought the distribution of circulars was not of so much account as the distribution of men. He thought a great deal of the work they were accomplishing was due to the support of the medical profession. Not that they were educating the profession up to their standard, but they were going with the profession up to a standard that was held in com-

mon. If in a district where an epidemic is prevailing there is a good physician, he carries more influence with him than any document possibly can. Statistics become of value when they have covered a century of observation. A remark was made to him which he thought very applicable. A physician who had given considerable thought to the subject, and could not always make results harmonize with theories, said at last: "Doctor, I have got my deaths down to such a rate I am going to die this year while the statistics figure right."

Dr. Hibberd said it did not matter how much authority a person had, he can accomplish but little without the support of the people. He was ready to affirm that they would never succeed in doing the best possible work until people are educated up to the support of the authorities.

E. C. Jordan, C. E., of Maine, thought there was a value in statistics. When a man died he wanted a table of statistics to show what it cost that community, and by this means he would prove to the community what they could save by lowering their death rate. He would like to have Dr. Baker show what it cost the State to lose one hundred individuals: cost of funeral expenses, cost of sickness, etc. He thought such a table of statistics would make practical work in sanitary reform strong.

Dr. Hewitt said he valued the use of documents and he valued the statistical work of Dr. Baker; he was a model in this direction; but when it is supposed that these statistics are the result of the distribution among the people of a document published by anybody, he thought it was a mistake to lay the cause there, or largely there. As to the use of dogmatic power in the administration of sanitary law, he thought there was no necessity for it; persuasion is of more value.

Dr. Baker said that circulars were sent to the neighbors of the persons sick, and he found that the people did read them, and for this reason: say they have small-pox, they want to know what they shall do to escape the contagion, and it is just such information that is contained in these circulars. He said that the statistics of States and cities did not agree with the statement made by Dr. Abbott; even the table he had just presented proved Dr. Abbott's statement an error, so far as relates to scarlet fever; and the table relative to small-pox contains *two* epidemic years since the organization of the Michigan Board, which should offset the epidemic year, 1872. The good results of the work in Michigan were greatest, however, in epidemic years.

Dr. Holt, of Louisiana, had not gathered from Dr. Baker's paper that he sat in his office and did nothing but send out these circulars and tracts among the people; but rather that they were an adjunct to his labors, and it has been their own experience that circulars sent in this manner, giving in detail instruction in case of diphtheria, for instance, or scarlet fever, small-pox, or yellow fever, and giving explicit directions as to sanitary affairs, does give great assistance. It educates

the people. It prepares the way, by educating the mind, for the reception of the power that had been referred to as dogmatic power. He said that Dr. Hewitt spoke of doing things by means of kindly suasion and without resort to power. If a parent or school master undertakes to treat his boys with kindly suasion, and these boys find it out, they are going to walk over that teacher; but when they know that behind that kindly suasion is a rod, they very seldom require the rod. Boards of health must have the power in order to exercise with effect the kindly suasion. In times of excitement, when the public mind is greatly disturbed, he thought there was nothing in the world equal to the distribution of these little circulars and pamphlets to reassure them.

“What should be the basis of compensation for local health officers?”

Dr. G. B. Thornton, member State Board of Health of Tennessee, considered that the proper pay of a health officer must be determined by the amount of work and responsibility incident to his office. So far as his knowledge went, as a rule health officers are underpaid. When the duties of the office require the greater part of the officer's time he should be paid a salary which would enable him to give up all private practice and devote all his time to the public service. Assuming that the health officer is an experienced physician, and in his opinion none other should hold the office, he thought he should be paid from \$100 to \$250 a month, or from \$1,200 to \$3,000 a year, owing to circumstances as indicated, when the duties of the office require much of the officer's time. In some instances he thought this sum would be inadequate, for example, when the responsibilities are great and the public service requires his whole time. When the office is very little more than advisory, and secondary to private practice and other private interests, the pay should be determined accordingly. As a rule the salary of the health officer is too low. The duties require education, expert knowledge, moral courage and time, and he should be compensated as other professional men for like service, and he held to strict account for efficient work. A good officer is never overpaid; a poor one is not cheap at any price.

Dr. S. W. Abbott said it was a subject with which he had had no experience. He thought such officers should be well paid. In the cities of his State they paid fair salaries. Their salaries range all the way from nothing up to \$3,000.

Mr. Jordan thought the compensation of the local health officer would be the same as that of the selectmen—two or three dollars per day when at work.

Dr. Abbott said it might be so in certain localities. In his State the local boards of health were defined by law as independent boards when the towns elect them; when they do not, the selectmen are the boards. In some cases they are paid by the day. In the large cities,

of which there are some twenty-two or twenty-three, the compensation is fixed.

Dr. McCormack said the question was of very great importance to the western and southern States. The object his board had in submitting this question was to get at the practical results that had been arrived at in other States, as to what was the basis of compensation for health officers, more particularly in reference to small towns and cities, and he was sure there must be members present who were familiar with the subject.

Dr. Baker said the health officer of Detroit is paid \$3,000 per year. Some of the smaller cities pay smaller salaries. His city (Lansing) pays \$300. It is one of the most important things to be considered how the health officer should be paid. He should receive proper compensation, and some way should be devised to secure it. His State had passed a law relative to the duties of the health officer, providing that if he performed these duties he should receive not less than two dollars per day. That law stands to-day.

The following subject was considered :

"Investigation of the causes of disease. How can State Boards of Health secure the best results?"

Dr. Fisher opened the discussion by saying that the question to be considered by the conference was the advisability of planning some method of utilizing the great mass of material that might be obtained through the physicians of the various States. He thought the subject should be taken into consideration by a committee during the year and a report made at the next meeting of the conference. If it seemed advisable, they might report plans and methods of procedure, even, perhaps, to the circulars of inquiry, the questions to be submitted and the manner of recording the facts. He thought that by distributing proper circulars and blanks to the great mass of physicians they would be able to return a great deal of valuable information upon some one line of inquiry. At any rate it would be of advantage to the physicians in inducing them to observe and record their observations, and by this means there would be an advance in the qualifications of those engaged in the work. From the circulars distributed facts could be recorded and returned to the board, and the facts thus presented could be classified and some really logical conclusions might be drawn therefrom. He desired the opinion of the conference on this subject.

Dr. Henry B. Baker, of Michigan, said :

Elsewhere and heretofore, sickness statistics, for a long period of time, have only been obtained for a few communicable diseases, with regard to which compulsory notification is enforced; but we now have established, in the State of Michigan, a system which enables us to have reliable statistics of sickness from all the important diseases. The system is based upon the law of averages—which makes it probable that one hundred or more physicians in active general practice

in different parts of the State will, on the average, see an average of the several diseases which ordinarily occur; and those are the diseases which cause most sickness and most deaths, and consequently are the diseases which it is most important to study, with the view to learning the manner of their causation. The reports concerning sickness published by the Michigan State Board of Health show the relative prevalence of sickness from each important disease, in each month, and in each year, and from each disease compared with other diseases; they thus show the relative danger from each disease compared with other diseases, and compared with the same disease in other years, or in other months in the same year.- These statistics are based on the actual observation of physicians in different parts of the State. It has been alleged that these statistics give only the *opinions* of physicians; (Public Health: Transactions of Am. Public Health Association; Vol. XI, page 60;) but this is an error, the weekly reports of sickness now being statements of fact as to whether the physicians did or did not observe the disease in question during the week for which the report was made.

"Collective Investigation of Disease" has thus, in Michigan, been put upon a scientific basis. It must, I think, be admitted that for the purpose of learning the causes of diseases, sickness statistics are far more valuable than statistics of deaths, therefore as an answer to this question before the conference, I respectfully submit our present methods in Michigan, namely: Weekly reports by representative physicians of all sickness under their observation, together with regular observations, by representative meteorologists, of conditions likely to affect diseases. I here submit a copy of the postal blank used in Michigan:



*Diseases in* \_\_\_\_\_ [and vicinity?]  
 [PLEASE DATE.]  
*week ending Sat.,* \_\_\_\_\_ 188\_\_

No. ....		Prevalence. Order. See a.	Cases.
ED. 25.			
a. Please mark the disease of which there is the greatest number of cases, 1; the disease having next greatest number of cases, 2; the next, 3; and so on for each disease, writing the same figures opposite diseases having the same number of cases. Write 0 opposite each disease of which there is no case under your observation. [For full statement of plan, see second, third and fourth pages of record-book cover.] A blank indicates that the item has been overlooked. Please mail this, signed and DATED, as soon as convenient after close of week specified.	Brain, Inflammation of, .	.....	.....
	Bowels, Inflammation of, .	.....	.....
	Bronchitis, . . . . .	.....	.....
	Cerebro-spinal Meningitis, .	.....	.....
	Cholera Infantum, . . . .	.....	.....
	Cholera Morbus, . . . . .	.....	.....
	Consumption, Pulmonary, .	.....	.....
	Croup, Membranous, . . .	.....	.....
	Diphtheria, . . . . .	.....	.....
	Diarrhoea, . . . . .	.....	.....
	Dysentery, . . . . .	.....	.....
	Erysipelas, . . . . .	.....	.....
	Fever, Intermittent, . . .	.....	.....
	Fever, Remittent, . . . .	.....	.....
	Fever, Typhoid (Enteric), .	.....	.....
	Fever, Typho-malarial, .	.....	.....
	Influenza, . . . . .	.....	.....
	Kidney, Inflammation of, .	.....	.....
	Measles, . . . . .	.....	.....
	Neuralgia, . . . . .	.....	.....
	Pneumonia, . . . . .	.....	.....
	Puerperal Fever, . . . .	.....	.....
	Rheumatism, . . . . .	.....	.....
	Scarlatina, . . . . .	.....	.....
	Small-pox, . . . . .	.....	.....
	Tonsillitis, . . . . .	.....	.....
	Whooping-cough, . . . .	.....	.....
	.....	.....	.....
	.....	.....	.....

b. This report is of diseases UNDER YOUR OBSERVATION; if it includes a contagious disease, please mention, on the bottom or margin of this card, the township, city or village in which the disease is.

M.D.

Dr. Wm. H. Cretcher, President State Board of Health of Ohio, suggested that there was no better way of getting at the facts relating to the cause of disease than by the system adopted by the British Medical Association. They issued a circular and distributed it through their journal to all their subscribers, some 12,000, the questions to be answered by the individual according to his own experience and observation. He thought the point well taken that if scientifically carried out great benefit could be derived from this manner of investigating disease. One subject at a time he considered sufficient to be reported from. There should be a committee appointed at this meet-

ing to carefully codify questions pertaining to particular diseases. The answers should be in accordance with actual observations and not theoretical.

Dr. Fisher fully agreed with the last speaker, that nothing but facts were wanted, without theories or opinions. He moved that a committee of five be appointed by the conference to devise a plan for obtaining facts from the physicians in the several States through the State Boards of Health, and that the committee report at the next annual meeting of the conference.

Dr. Fisher's motion was put and carried, and the following committee appointed :

Dr. Charles H. Fisher, secretary State Board of Health, Rhode Island.

Dr. S. W. Abbott, secretary State Board of Health, Massachusetts.

Dr. Benjamin Lee, secretary State Board of Health, Pennsylvania.

Dr. P. H. Bryce, secretary Provincial Board of Health, Toronto, Ontario.

Dr. G. B. Thornton, member State Board of Health, Tennessee.

Adjourned to 8 o'clock P. M.

#### EVENING SESSION.

The conference met according to adjournment. The question of converting the conference into a section of the American Public Health Association, under the following resolution adopted by the American Public Health Association at its thirteenth annual meeting, was taken up :

*"Resolved*, That the representatives of State Boards of Health constitute a section of the American Public Health Association to be called the 'Section of the State Boards of Health,' which shall elect its own chairman and secretary; and that the executive committee, through the secretary, arrange for the meetings of this section on the day preceding the general session of the American Public Health Association; and that the executive committee arrange a day, or portion of a day, during the general session for the exclusive consideration of matters relating to State Boards of Health, and for the reception of reports and propositions from the section of State boards."

On motion, it was voted that the resolution be received for consideration.

The State Board of Health of Kentucky, through its secretary, Dr. J. N. McCormack, offered the following as a substitute :

*"Resolved*, That the representatives of the State Boards of Health constitute a section of the American Public Health Association, to be called 'Section 1 of the Conference of State Boards of Health.' This section shall hold its annual meeting at the place and on the day preceding the meeting of the association, and at such other times and places as it may find necessary; shall elect its own officers and make

its own rules, and shall present so much of its work as it may think proper, to the association, subject to the approval of the executive committee of that body."

After a long discussion, participated in by several members of the conference, the substitute and original resolution were laid upon the table.

The committee appointed at the morning session to take into consideration the subject of transportation of the bodies of deceased persons on lines of public travel, reported through Dr. Benj. Lee, chairman, as follows:

*To the President and Members of the Conference of State Boards of Health:*

GENTLEMEN: The committee appointed to consider and remodel the resolutions appearing on the order of business as "Resolutions from Michigan," on the subject of the transportation of dead bodies, beg leave respectfully to report:—

That it appears from replies made to a circular letter addressed by the chairman of the committee on "Preventable Diseases and the Supervision of Travel and Traffic" of the State Board of Health of Pennsylvania, received from State Boards of Health, or health officers in nineteen States that the transportation of bodies of persons dead of small-pox, Asiatic cholera, or yellow fever is neither by statute or by regulation of State Board of Health absolutely forbidden in five States, viz: Alabama, Indiana, Kansas, Kentucky, Missouri, and that in the other States it is to a great extent practically forbidden by the action of the transportation companies themselves.

That in nearly all the States certain precautions are enforced in the matter of the transportation of corpses irrespective of the nature of the disease which was the cause of death, either by statute, by regulations of State Boards of Health, or of local boards of health, or of municipal ordinances, and

That, in consideration of the constant necessity for the transportation of dead bodies, from one State into or through another, it is eminently desirable, as well for the avoidance of unnecessary delay and distress to the relatives of the deceased, as for the protection of the public health that there should be uniformity in the provisions adopted by the several States and provinces upon this continent.

In view of the foregoing considerations, your committee respectfully suggests the following substitute for the resolutions referred to:

*Resolved*, That it is the sense of this conference

1. That the bodies of persons dead from the following named diseases should not be transported outside of the jurisdiction of the health authorities in which the deaths have occurred, within a period of five years after death, unless such bodies shall have been subjected

to cremation, viz.: diphtheria, scarlet fever, small-pox, cholera, yellow fever and typhus fever.

2. That no body shall be transported except by permission of the health officer of the locality in which the death occurred, and in case of communicable diseases notice should be given to, and whenever practicable, permission should be received from the health officer of the locality to which it is desired to take the body.

3. That a permit for the removal of a dead body should not be granted only on assurance that it has been suitably prepared for such removal, at the discretion of the local health authority of the place from which it is to be removed.

All of which is respectfully submitted.

BENJAMIN LEE, *Chairman.*  
CHARLES H. FISHER,  
SAMUEL W. ABBOTT.

It was moved and carried to take up the resolutions separately.

Dr. Hunt, of New Jersey, said he should be sorry to vote for the first resolution. He could not tell why a period of five years should be determined upon. He did not think the conference was in a position to adopt the resolutions at the present time.

Dr. Joseph Holt, president State Board of Health of Louisiana, did not think these resolutions could be gotten into practical use. To fix a period of five years was practicable only on paper.

Dr. Harding thought it would be better not to transport dead bodies at all. The character of the person who issued the certificate of transportation was not always known, hence the certificate might not represent the true facts in the case.

Dr. Bryce moved that it be recommended by the conference that bodies dead from any disease named in the report be not transported by rail until thorough disinfection had been practiced, cremation, or such a period of years had elapsed as would practically exclude danger from such source.

Dr. Conn said it seemed that in this discussion a certain amount of ignorance is acknowledged, and still further that there was a lack of confidence in each other. Dr. Harding has no confidence in the certificates coming from the States because he has no acquaintance with the gentlemen who gave them. In New England the transportation certificate simply says that the person died of no contagious or infectious disease, and medical men have done all they can to prevent the spread of disease by dead bodies. If bodies are delivered on the road and become nuisances, it is not the fault of the health officer who gave the certificate, but rather of the friends who persist in carrying about the bodies of the dead. If the conference says that it will not give its consent, or recommend that any body dead of a contagious or infectious disease be removed, it has done all it can. The permit

assures the railroad authorities that they may carry the bodies until they become putrid, without danger to the employés or others. As a conference, all that can be done is to educate public opinion, and when it says to the public, "you cannot carry contagious or infectious diseases on the trains," and the railroad authorities are willing to back it up, all that is possible has been done. It is a matter in which every State must be a law unto itself.

Dr. Harding remarked that he knew from experience that coffins which were reputed to be hermetically sealed were only nominally so.

Dr. Baker said that he had previously stated that his board did not approve of the first resolution. In Michigan bodies are received from other States with an accompanying certificate stating that the persons did not die of a contagious disease, and the cause would be diphtheria or typhoid fever. He desired some action that would do away with this practice.

Dr. Wight, Health Officer of Detroit, Michigan, said they suffered in many parts of the State by the removal of dead bodies. He believed that the removal of the bodies of those who died of diphtheria should be restricted. There was a way to stop it, but not by the adoption of this resolution. There was a way to throw safeguards around the transportation of dead bodies.

The amendment moved by Dr. Bryce was lost.

On motion, voted that the resolution be indefinitely postponed.

The second resolution was then read by the secretary.

It was moved and seconded that the resolution be adopted.

Motion lost.

The third resolution was then read by the secretary.

Moved and seconded that the resolution be adopted.

Motion lost.

The next subject taken up was the third proposition from Kentucky, to-wit:

"3. How much in regard to preventive medicine can be taught in public schools of low grade, and what is the best method of such teaching?"

Dr. J. Berrien Lindsley, secretary State Board of Health of Tennessee, said for many years he had been connected with the school system of his city and State. The school house in the United States in the nineteenth century is what the church was to Europe in earlier times, the sign and source of civilization. The great body of children in the United States stopped with the schools of the lower grade. In traveling over different sections of the country he had observed the uneducated handling the engine and making use of steam, although they had no knowledge of the subject of latent heat. He saw the application of the most wonderful discoveries by people of very little education. People suffer from a violation of sanitary laws, and a knowledge of these subjects should be systematically taught. In

order to teach the children in the lower grade of schools, those ten or twelve years of age, the teaching must be dogmatic and practical.

Dr. James E. Reeves, of West Virginia, said he would like to ask if this subject could not with equal propriety be discussed before the American Public Health Association.

Dr. Bryce said that for two or three years the Canadian representatives had been greatly interested in the meetings of the American Public Health Association, but it seemed to him to be one of the best ways of killing the conference, to introduce questions which belonged to that association.

Dr. McCormack said the duty was imposed upon the State Board of Health of Kentucky of supervising or recommending text-books upon preventive medicine for the common schools of the State, and it submitted these questions because when asked, as the delegated authority of the State, to recommend suitable text books, they were at a loss what to say. Out of the great mass of books calculated for schools, they had been able thus far to find nothing adapted to the use of primary schools, and it seemed to him that there could scarcely be a matter of more importance than the discussion of this question: In what way shall we reach the millions of children now in the schools of the United States and Canada? How shall we reach them so as to impress them and make them remember?

Dr. Bryce thought that no practical results would come from the discussion of the question before the conference. Inter-State work could be made practical by coming together and applying conclusions. If there was but one day for the discussion of State and Provincial board matters, the conference had better proceed to some subject more practical.

The following subject was then taken up:

"Inter-State notification in regard to infectious diseases and inter-State coöperation in regard to inspections, and other work for the prevention of the same."

Upon this subject Dr. Bryce then read the following paper:

**Report of the Committee on Inter-State and Inter-Provincial Notification of Infectious Diseases to the National Conference of State Boards.**

GENTLEMEN: Your committee, in presenting its report, begs leave to state that since the last meeting of the conference there has fortunately been no great necessity in the northern part of the continent for carrying into practical effect the work proposed at the last conference, as being that which your committee was especially appointed to promote.

In December of last year the Montreal small-pox epidemic had begun to show signs of abatement, but the same precautions previously taken in those states and provinces lying contiguous to Quebec continued to

be necessary until late in February. The freedom from this scourge, in unusually large degree, of those European countries contributing most largely of emigrants to this continent has fortunately prevented the introduction by any avenue of more than a few cases of small-pox during the past season, and no cases of cholera, as far as I am aware, have been imported during the year to America. While in these matters we have much for gratification and thankfulness, it makes the necessity for work by conference in this direction necessary, remembering the old adage: "In peace prepare for war."

As was generally expected after the discussion last year, officers of States and Provinces, particularly the northern section, have kept one another informed to some extent of cases of small-pox occurring here and there, but the absence of any complete system has prevented this from being done with any degree of thoroughness. As most will remember, a full and complete description of the quarantine system of Canada along the St. Lawrence was given to the American Public Health Association last year, and since that time the energies of all Canadian executive officers, Dominion and Provincial, have been devoted to obtaining those improvements which, in report after report, the chief quarantine officer of the St. Lawrence, located at Grosse Isle, had for years been urging upon the government, and which Dr. Rauch so strongly recommended last year. Such repeated recommendations have, I am happy to report, produced fruit in the shape of supplementary Dominion regulations published in the *Canada Gazette* of August 3, 1886, and, should their execution be thorough, I am sure that the conference will agree that little more can be wished for. It may be of some interest to state one or two little incidents which have occurred during the past season, which show how essential to continental safety is a wide-reaching, practicable and thorough inspection of passengers at Atlantic seaports, both Canadian and United States. On the 14th of June I was informed that two cases of small-pox had occurred in persons of the crew of one of the fine Lake Superior steamers of the Canadian Pacific railroad. Hearing that no French sailors were employed on these boats, by whom small-pox might have been conveyed from Montreal, etc., I immediately suspected that the infection might have come from immigrants. Proceeding several days later down the St. Lawrence, I learned from Dr. Montizambert that several Russian immigrants had been landed at Grosse Isle with small-pox. Writing immediately to the traffic manager of the Lake Superior vessels I learned that a party of Russians had on May 19 taken passage for Manitoba. The steamer of that date was the same as that on which the seamen were who took sick. Later I learned that a case of small-pox had broken out in Chippewa county, Michigan, and subsequent events proved that the person attacked had gone to Sault St. Marie on May 19. Later advices informed me that a case of small-pox had occurred in a woman who had been staying at immigrant

sheds in Winnipeg when these Russians arrived there. Still later Dakota had a small-pox outbreak in a Canadian family from Manitoulin Island, who, oddly enough, had come south by a local boat, and had gone north on the 19th of May boat. One or two cases occurred about the same time as these in other parts of Michigan and Illinois. Regarding the first I have no definite information regarding the source of the cases in Detroit and Wayne county; but regarding the case in Illinois, Dr. Rauch states that the patient was seen June 12 (five days after she was infected), and as she came by the St. Lawrence and voyaged on a vessel which landed small-pox at Grosse Isle, it is fair to assume that she contracted the disease on board ship, or, perhaps, more accurately, on train en route between Quebec and Toronto.

As an incident of these outbreaks I may state that on June 30, after every case in Owen Sound had been isolated and general vaccination carried on, I received a telegram from Surgeon General Hamilton asking whether it was not true that a number of cases of small-pox had occurred in Ontario, and threatening quarantine if effective precautions were not taken. A telegram with similar inquiries a day or two after from Dr. Baker, Michigan, led me to conclude that Dr. Hamilton's information had passed *via* Lansing. The inquiry by Dr. Baker was quite proper and right, but it illustrates the necessity for some system of notification, and for the establishment of greater confidence between State and Provincial officers.

I conceive that the remainder of my report may be made up, in great part, by reference to a question raised by the department at Ottawa in a letter, stating how thorough have been the arrangements made in protecting the Dominion and United States against infectious disease introduced *via* St. Lawrence. I am informed by the Secretary of the Department of Agriculture as follows, regarding information relating to the working of the quarantine regulations supplied him some little time ago:

"OTTAWA, October 2, 1886.

"SIR: I have to acknowledge your letter of the 22d ult., in which you request information to be furnished in relation to the quarantine regulations of August 3 last, and in reply to your several questions I have to inform you:

"1. The pilots of the St. Lawrence have been furnished with copies of the proclamation, and with instructions to supply the shipmasters with copies.

"2. All shipmasters will be obliged to obey these regulations, as a necessary condition of obtaining customs entry.

"All the mail steamers call at Rimouski, as will all steamers other than mail, arriving during daylight at Grosse Isle; but steamers arriving at night will, for the remainder of the present season, or for such limited time as may be determined, be allowed to pass on to



Quebec for inspection by the port physician. But this is only in the event of their having no contagious disease on board. A vessel passing Grosse Isle with contagious disease on board would be simply and absolutely refused customs entry, and be ordered to be sent back. It has been fully explained to the shipping companies that there can be no exception to this rule on any account whatever, and the consequences which would arise to a large steamer from being sent back are of such a nature as to afford a guarantee that no attempt will be made to pass.

"Masters, officers and surgeons of steam or sailing vessels will be examined on oath on a form of questions accompanying, the quarantine officer asking such further questions or taking such further steps to elicit the facts as he may find necessary.

"3. No penalties have so far been imposed for non-compliance with the regulations, which were published for the purpose of conveying the information before the necessary copies could be supplied for distribution by the pilots, and further for the reason that it was thought advisable to correspond with the shipping companies in order that they might have a thorough understanding of the nature of the arrangements and so take away any excuse for their contravention. I may further inform you that an understanding has been arrived at with the steamship companies to have a thorough inspection by the ship's surgeon, within twenty-four hours after leaving port, of all passengers, in order to ascertain the fact of satisfactory vaccination, or of their having had the disease of small-pox within seven years. This examination is now, and has for some time been put into practical effect, a card to indicate the fact being given to each passenger.

"The insistence of the department was that all passengers, including cabin, should pass the examination, but Mr. Andrew Allan, of the Allan line, personally conveyed the information to the department a couple of days ago that in the case of the Atlantic steamers plying between the ports of Liverpool and New York, such inspection is not insisted on in case of cabin passengers. It is a point for the consideration of an international health conference whether the system in this respect should be uniform, as between Liverpool and Canadian ports, and Liverpool and United States ports.

"I have the honor to be, sir, your obedient servant,

"(Signed),

"J. Lowe,

"P. H. BRYCE, ESQ., M. D.,

"Sec'y Dep't of Agriculture.

"*Sec'y Board of Health, Toronto.*"

It will be observed from these statements that the remark contained in the last paragraph introduces a question of very serious import to Canadians: Since, if it be true, that the cabin passengers *via* New York and Boston are exempt from examination as to vaccinal protection it is quite plain that the ship companies of the St. Lawrence have

good cause for complaint against any regulations discriminating to their detriment and in favor of United States seaports. Gentlemen present can doubtless give us ample information on this point. The details of the St. Lawrence quarantine shall be left by me for amplification and explanation by the quarantine officers of those stations.

Where quarantines have been thorough it is evident that the question of inter-State notification of disease is much simplified on the one side, but there is, nevertheless, a great deal of work left for us in other fields. Internal outbreaks may occur, and in the south and along the Mississippi, yellow fever may at any time appear. In this work we see already inter-State coöperation under the Sanitary Council of the Mississippi Valley; and there can be no good reason why such organization should not prevail in those States and Provinces east and west, through which European immigration mostly flows. In conclusion, I would propose that the following or similar rules become those of the association in regard to these matters.

I. That quarantine officers of every port shall notify State and Provincial officers along the lines of immigrant travel that such and such ships have landed passengers suffering from small-pox and other infectious diseases, and that a general statement of the destination of the immigrant passengers from these vessels be given.

II. Should cases occur amongst immigrants *en route* inland, then provincial and State officers of the district in which the case has occurred shall notify those adjacent and further west along the line of travel.

III. Internal outbreaks of small-pox, etc., in any State or Province, especially when in the person of travellers, shall be reported to officers of adjoining States.

IV. In regard to the transportation of the bodies of dead persons, who have died from infectious disease, the rules for the notification of officers of adjacent States, emanating from the committee of the conference appointed for that purpose, shall be adopted.

All of which is respectfully submitted.

Dr. Holt, of Louisiana, thought this question was of the utmost importance and that one of greater magnitude could not possibly come before the conference, and taking into consideration that most of those present were suffering from the fatigue of a long day's journey, the discussion should be postponed until the next day. While the paper set forth the practical working of inter-state notification, it was essential that the subject be thoroughly considered and discussed. It would be found that fundamental principles were involved, without a clear recognition of which, all the resolutions that could possibly be formulated would not be worth the paper upon which they were written.

After considerable discussion as to time, it was finally voted to adjourn to meet at 9 o'clock A. M., Tuesday, October 5.

## MORNING SESSION—TUESDAY, OCTOBER 5.

The conference met according to adjournment. The first subject taken up was "The plumbing of the new capitol of Indiana." Upon this subject the following paper was read by Dr. Metcalf: —

- Mr. CHAIRMAN AND GENTLEMEN: The subject to which I desire to call your attention is one which may not be of much moment to you individually or collectively, but it is one of paramount importance to the board which I represent and the people of the State. This importance is heightened by the fact that it will, in all probability, be the subject of legislative investigation. If the positions we take are correct we ask your approval. If otherwise, we wish an expression to that effect.

There is now in process of construction and nearing completion a Capitol building at Indianapolis, Indiana, which in many respects will be a credit to its projectors and tax-payers.

This structure as provided by law, is under the supervision of four commissioners, of which the Governor is a member ex-officio.

They began the erection of this building in 1877, some four years prior to the organization of the State Board of Health. Rumors of defective plumbing and house drainage were afloat, and charges having been made to the same effect, at a meeting of the county health officers held at Indianapolis, February 18, 1886. Dr. J. F. Hibberd, health officer for Wayne County, introduced the following resolution which was unanimously adopted:

"*Resolved*, That it is the sense of this convention that the Board of Health should institute such inquiry as shall determine with certainty whether or not there is anything defective in the sanitary arrangements of the State House now under construction, and if anything defective be found in the ventilation, plumbing and drainage of the building or grounds, advise the State House Commissioners of the nature, extent and consequences of the defect, and what should be done to remedy it."

In conformity with this resolution the Board of Health directed its Secretary to make an investigation of the matters referred to and report to the board.

In obedience to this instruction, investigations were made from time to time which resulted in revealing what we consider serious defects, which are as follows:

*First*.—A brick sewer, four feet in diameter, which is a part of the city's sewerage system, passes beneath the building.

*Second*.—Earthenware drain pipes with which the waste pipes from urinals and wash-stands connect, and also the soil pipes from the water closets, enter the sewer beneath the building. These pipes are buried beneath the basement floor and are inaccessible.

*Third*.—In the cellar iron waste pipes enter earthenware pipes, the joints of which are made with hydraulic cement.

*Fourth.*—A soil pipe on the first floor vents into a brick flue which opens into the attic.

*Fifth.*—At the north end of the building a soil pipe vents into the main chimney.

*Sixth.*—The soil pipes are five inches in diameter, and their branches four inches.

*Seventh.*—The waste pipes from urinals are four inches in diameter, and can not be thoroughly flushed by means ordinarily used.

*Eighth.*—No provision has been made for venting the taps to urinals and wash-stands.

*Ninth.*—The soil pipes are not provided with fresh air inlets.

We pointed out these defects in a communication addressed to the commissioners April 23, 1886, stating that in our judgment, unless these defects were remedied, the building in the near future would become disease-breeding and endanger the health and lives of its occupants.

We object to the sewer because it is a part of the city's sewerage system, draining twenty squares before passing beneath the building. We maintain that the passage of a sewer beneath a building that is to be occupied by human beings is unsanitary, and not in keeping with modern sanitary teachings.

The commissioners, in a reply dated May 20, 1886, defending the system of plumbing and house drainage which they have adopted, embody a letter written by one Levi R. Green, whom they had employed to examine the work and report the result of his investigations.

They say that this gentleman has a national reputation as a sanitary engineer, and that he has made plans and specifications for plumbing State houses, hospitals, penal institutions and hotels in various parts of the country.

This sanitarian approves of a sewer passing beneath a building that is to be occupied by human beings, and particularly approves of the one that runs under our Capitol building, as he says, because "it is built of brick laid in cement and lined with cement," and that the "basement floor is made of concrete or broken stone lain in cement." This design, in his judgment, "will be altogether satisfactory and successful, and will never be the cause of any evil effects from a sanitary point of view."

He also ventures the opinion "that if the State Board of Health is assigned quarters in the basement of the building, and are permitted to live until they are injured by the gas therefrom they will die a good old age."

In contradiction I will say that the sewer is not cement lined. The sewer and drains of the building are not provided with any means of ventilation, and a standard authority says "unventilated sewers are far more dangerous than steam engines without safety valves."

Neither is it provided with means for flushing except by rainfalls which occur in the spring, summer and fall, and flushing in this way can not be thoroughly accomplished.

If this sewer or house drain (which it becomes as soon as it passes beneath the building, as it receives all the sewage of the building within the foundation walls) will not be flushed only as the rain may fall semi-annually as above stated—(and that is what the city engineer says in a letter to the commissioners) what will be the result? Simply this, that the excrement and other filth that is deposited in it during the winter season must lie there to rot, decompose, generate sewer gas and breed disease germs to enter the building through the unventilated house drain and opening which may occur in the same.

This engineer with a "national reputation" (?) says that the basement floor is made of "broken stone laid in cement," but at the same time he fails to mention the fact that many apertures have been made in it for the passage of soil and other drain pipes, thereby leaving convenient breathing places for the foul sewer.

We will state, without fear of successful contradiction, that house drains to be used within a building should never be made of earthenware, cement or brick; and that the only material from which such drains should be constructed is iron. In support of this position, we will quote from standard authorities on sanitary engineering and also part of section four (4) of an ordinance for the regulation of plumbing now in force in the city of Boston, the home of Mr. Green. It is as follows: "Drain and soil pipes through which water and sewage is used and carried shall be of iron when within a building, and for a distance of not less than five feet outside of the foundation wall thereof. They shall be sound, free from holes and other defects."

William Paul Gerhard, chief engineer of Philadelphia, a member of the American Public Health Association, in a work on house drainage and plumbing, says: "Fortunately, however, we can with perfect safety run the drains across the basement floor of a dwelling provided we use the only safe material, *i. e., heavy iron pipe.*"

Baldwin Latham, past president of the Society of Engineers, London, England, in his work on sewerage and house drainage, says: "It is imperative that all sewers and drains should throughout their entire length, be constructed so as to be perfectly impermeable," also that all ventilating pipes and drains should, as far as practicable, be kept out of the interior of a house and should be so arranged as to be easily examined at any time.

James C. Bayles, editor of "*The Iron Age and Metal Worker*," in his work on house drainage and water service, says: "I have never seen a house drain built of stone, brick or wood, and rarely one built of earthen pipes with cement joints, which I should be willing to live over. Stone drains having rough inside surfaces cannot be effectually flushed, and become coated throughout with foul deposits,

offensive and dangerous in their rapid decomposition. Brick drains as usually built have this objection, together with the liability of, all but exceptionally good bricks to disintegrate when buried and kept constantly wet. Even when highly vitrified and laid with hydraulic cement, their rough surfaces and perviousness of their joints to water are objections which should exclude them from use for this purpose. *Earthen pipes, even when well glazed, cannot be depended upon when laid in cellars, for the reason that the best cement joints are pervious to water, which carries with it organic matter to lodge and decompose in the pores of the pipe and its joints ;*" also that "iron is so much better than any substitute yet found for it, that it should, I think, always be exclusively used in the drainage of city houses."

Waring, Helyer and Davis, recognized authorities on house drainage and plumbing, state unequivocally that all sewerage should be carried outside the building in iron pipes.

The *Sanitary Engineer*, published in New York and London, and extensively read in the United States, in its issue of January 28, 1886, says: "A brick sewer in a building is out of place. It is a relic of an ignorant age in matters of house drainage and sewerage."

The *Sanitary News*, in its issue of May 29, 1886, in speaking of this sewer, says: "It is shown that in addition to receiving the sewerage of the State House, this sewer drains twenty squares of land, and is in fact a portion of the regular system of the city's sewerage, a fact which makes its position under a great building all the more reprehensible."

The system of house drainage and plumbing adopted by the Government engineers is probably the latest and most improved, and they do not use brick sewers or earthen drain pipes in buildings. In the post office of our city they abandoned the brick sewer formerly in use and substituted iron pipe.

The engines that are to be used in running the machinery of the building (such as ventilating fans, elevators, etc.) are to be exhausted into the sewer. This will cause sudden changes in the temperature of the air, producing unequal air pressure in the drain, which will seek relief at the points most easily forced, which points will be the water-sealed traps and any defects existing in the house drains. The same effects will be produced by the sudden flushing of the sewer by a heavy rainfall.

Another objection which our board has to the system of plumbing and house draining employed, is that in the cellar iron waste pipes from urinals and washstands enter earthenware pipes, the joints of which are made with cement. The change of temperature, or the alternate passage of hot and cold water through the pipes, will produce sufficient contraction and expansion of the iron to break the seal and render the joints defective.

The reply of the commissioners contains a report submitted to them

by the architect and superintendent of the building, in which they say "the plumbing has been arranged in accordance with the cardinal requirements of perfect house drainage; cast-iron pipes for urinals, four inches in diameter, enter vitrified stoneware pipes, eighteen to twenty inches below the basement floor line. The temperature at this level is constant, and in no case will expansion or contraction of a four-inch cast-iron pipe cause a leak at this point." This statement that the connections are buried beneath the basement floor line is not true. The facts are, the connections are above the grade level, where they are liable to be broken at any time by having rubbish thrown against them, and even if they were buried at the depth mentioned, we hold that it is not admissible.

These gentlemen admit that the earthenware pipes are buried from eighteen to twenty inches beneath the basement floor line, and claim this to be in accordance with the "cardinal requirements of perfect house drainage."

We find that leading authors on sanitary engineering lay down principles diametrically opposed to the plan they praise so highly. Sanitary engineers with experience say "the best course of drain in the house is along the ceiling of the cellar, or along the foundation walls." In other words, whenever practicable, the drain should be kept in sight in order to enable anybody to detect a leaky joint at occasional inspections.

Circumstances sometimes "make it necessary to lay the drain pipes below the cellar floor. In such cases it may be laid with proper fall in a trench, the sides of which are walled with brick work, and the base of which should consist of a layer of from four to six inches of concrete, thoroughly rammed and properly graded. The trench should be made accessible by closing it with covers of iron or wood. In no case should a drain that is below the cellar floor be left inaccessible." The drains in the Indiana State House are not laid in accordance with the above, but on the contrary are laid in a crooked and irregular manner with brick walls frequently built across them.

No attention has been given to sanitary methods, either in laying the pipes or making the joints, as in many instances the cement has been simply plastered around the edges of the hubs and has cracked and fallen off. It is admitted by the commissioners, architect and superintendent that a soil pipe on the first floor vents into a brick flue, and maintain that this is in keeping with the latest and most improved methods employed by sanitary engineers.

We hold that this is not admissible and in no instance should a brick flue or chimney be used as a ventilator for soil or waste pipes, on account of the liability of the noxious gases arising from the pipes permeating their walls and contaminating the atmosphere of the rooms. Rules for regulating plumbing, as far as we have been able to examine them, require that "sewer, soil and waste pipe ventilators

shall not be constructed of brick, sheet metal or earthenware, and chimney flues shall not be used as such ventilators."

We have objected to the five-inch soil pipes used because we believe that four-inch pipes are sufficiently large for a building with any number of water closets. The smaller pipes can be more thoroughly flushed and do the work of larger ones. We object to the four-inch urinal waste pipes on account of their size, believing that half the size is large enough.

No provision has been made for venting the traps to urinals and wash-stands. We claim that it is as essential that they should be vented as the traps to the water closets, because they are as liable to become unsealed from syphonage, and if at any time this occurs the unsealed traps will allow a free escape of foul air in the waste-pipes.

The commissioners say "all soil and waste-pipes are trapped at the bottom; fresh air inlets are not provided for, as it is not believed best to do so under existing circumstances. In this latitude cold-air inlets would freeze the traps in the winter time." In the plumbing in the public building at Indianapolis the government evidently has no fear of such an accident, as fresh-air inlets are used.

We are reliably informed that the pure-air inlet is used in all of the best plumbing done in Boston, New York and Philadelphia, in which cities the winters are more severe than in the capital of Indiana.

Wm. Paul Gerhard, in his work on house drainage and sanitary plumbing, says: "Fresh-air inlets are no less important than the extension of the soil pipes through the roof." In order to effect a constant movement and change of air in the pipes, two openings are required, an outlet and an inlet. The extension of the soil pipe through the roof provides only an escape for the foul air generated in the soil and waste pipes through the decomposition of foul organic matter clinging to the interior and lodging in traps under water-closets and fixtures. But in order to oxidize and render harmless this organic matter undergoing putrefaction within the pipes, a constant introduction of fresh air from the outside atmosphere is necessary. There is a second and almost equally important reason for providing a fresh-air inlet whenever the third requirement, the trapping the drain, has been complied with.

If a water closet is used or a pail emptied into a slop sink, the water discharged into the soil pipes acts like a piston, and carries the air on its course downward with it by friction. Thus the descending water drives the air before it, and out through the fresh air pipe. If this had not been provided it would very likely force the nearest traps, which are under the fixtures, and send a puff of sewer gas into the rooms.

We might quote from the works of Waring, Heyler and others in support of the fresh air inlet, but we do not deem it necessary.

In conclusion, I desire to propound the following interrogatories:



*First.*—Should the passage of a sewer under a building for human habitation be approved?

*Second.*—Should earthenware drain pipes be used within the foundation walls of a building for the purpose of conveying sewage?

*Third.*—Should iron waste pipes from urinals and washstands connect with earthen pipes within a building?

*Fourth.*—Is the venting of soil pipes into brick flues and chimneys admissible?

*Fifth.*—Is it not as necessary for traps to urinals and washstands to be vented as those of water closets?

*Sixth.*—Should soil pipes be provided with fresh air inlets?

*Seventh.*—Should the sewage of a building be deposited in the sewer within its foundation walls?

I have asked these questions for the purpose of obtaining an expression from you, as these are the points on which our board and the commissioners have joined issue.

Dr. Conn said that before discussing the paper he had a suggestion to make. If he understood Dr. Metcalf right, he desired a full report, but that could be sent to him. It seemed that the paper, with any discussion which might follow, could be referred to a committee with instructions to report to the State Board of Health of Indiana, and he moved that the subject be so referred.

Dr. Canniff, of Toronto, said he wished to support the suggestion of Dr. Conn. It was a subject in which all were interested. The subject would apply to Toronto as well as the place to which it refers. The matter should go to a committee who should consider it and report through the American Public Health Association.

Mr. E. C. Jordan, C. E., of Maine, said that the question had been practically answered by the best authorities, and it would be simply putting their conclusions in a new form. He moved that the committee be authorized to answer any other questions that might suggest themselves in connection with the subject.

The motion was adopted and the following committee appointed: Mr. E. C. Jordan, C. E., of Maine; Dr. Wm. Canniff, Canada; Dr. G. B. Thornton, Tennessee.

The subject of interstate notification in contagious and infectious diseases was next taken up.

Dr. Joseph Holt, president State Board of Health of Louisiana, said that the question of interstate notification of disease, theoretically, seemed to be one which disposes of itself. Small-pox breaks out; under a system of interstate notification you tell your neighbors and that settles the question. Yellow fever breaks out; interstate notification—and the question was settled. But in practice when we are obliged to announce the appearance of a pestilential disease by the notification of neighbors, it becomes a vastly more difficult problem. The question involved, first the local outbreaks of the disease; the

extension of the alarm; the commercial disturbance of the locality, neighboring communities and States. It involves the play of human passion, terror in its most abject form, and avarice in the most hideous aspect in which it can be presented. You have to deal with men who place personal gain before the saving of thousands of lives. The next question to be considered are the remedies to be applied. He believed in letting the people know the extent of the danger because by so doing the alarm would be commensurate with the danger. By such a course people would not be frightened beyond the actual limit of the danger. It was hidden danger that paralyzed. He thought that State authorities should recognize the question in all its bearings, and should formulate plans to govern the relation of one State authority to another on this subject. States should have confidence in each other, and upon the outbreak of yellow fever or small-pox their movements should be decisive and determined.

The conference then adjourned to meet at 5 P. M.

#### AFTERNOON SESSION—TUESDAY, OCTOBER 5.

The conference met according to adjournment and took up the subject under discussion at the last meeting.

Dr. L. F. Salomon, secretary State Board of Health of Louisiana, offered the following resolutions, which were adopted:

"WHEREAS, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever and small-pox; be it

"1. *Resolved*, That it is the sense of the National Conference of State Boards of Health that it is the duty of each State, provincial and local board of health in any locality in which said diseases may at any time occur to furnish immediately information of the existence of such diseases to boards of health of neighboring and provincial States, and to the local board in such States as have no State board.

"2. *Resolved*, That upon rumor or report of the existence of pestilential disease, and positive, definite information thereon not being obtainable from the proper health authorities, this conference recommends that the health officials of one State shall be privileged and justified to go into another State for the purpose of investigating and establishing the truth or falsity of such reports.

"3. *Resolved*, That, whenever practicable, the investigations made under the preceding section shall be done with the co-operation of the State or local health authorities.

"4. *Resolved*, That any case which presents symptoms seriously suspicious of one of the aforementioned diseases, shall be treated as suspicious, and reported as provided for in cases announced as actual.

"5. *Resolved*, That any case respecting which reputable and ex-

perienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

"6. *Resolved*, That any case respecting which efforts are made to conceal its existence, full history and true nature, shall be deemed suspicious and so acted upon.

"7. *Resolved*, That in accordance with the provisions of the foregoing resolutions, the Boards of Health of the United States and Canada represented at this conference, do pledge themselves to an interchange of information as herein provided."

Dr. G. B. Thornton, of Tennessee, moved that the action of the State Board of Health of Louisiana in dealing with the outbreak of yellow fever at Biloxi, Miss., in August, be commended by the conference.

Motion adopted.

Adjourned to meet October 6, at 5 o'clock P. M.

WEDNESDAY, OCTOBER 6.—5 O'CLOCK P. M.

The conference met according to adjournment.

The first subject considered was "the report upon blank forms for uniform system of vital statistics."

On motion made at the meeting of the conference in Washington, Dr. H. B. Baker, of Michigan, was appointed to report on the subject of blank forms for a uniform system of vital statistics. At the meeting in Toronto he made a verbal report covering points somewhat as follows :—

First. He undertook to show that the adoption of a uniform system by the several States and Provinces throughout this country, at this time, was not advisable. Of course there should be a system for the collection of vital statistics by each State, and uniform throughout the State; but to advise that any system now in use shall apply to every State is to advise the permanent adoption of an imperfect system. In this, as in other branches of science, perfection can only be reached through taking advantage of useful variation through a considerable period of time; and although each State system must be uniform throughout the State, this does not prevent the adoption of useful, special methods in the large cities within the State, nor of a different system in each one of those large cities, if necessary, in order to conform to local peculiarities of laws or customs. He argued that the most important point to be aimed at first was that a reliable and earnest man be secured to supervise and make effective some system in each State; and that instead of that man seeking to make his work absolutely uniform with that in other States, he should seek to embody the best parts of the several systems in use in other States and thus aim at an ideal perfect system. To do this, he should have before him the work done by each of the other States, to profit by their failures and by their successes. He should study the best authors on vital

statistics, and should have the benefit of discussions in such conferences as this.

After several had spoken, Dr. Baker replied somewhat as follows :

To the suggestion that he had slighted the subject, and had not given it careful consideration, he replied that this subject was one to which he had given much thought during the last sixteen years, and his report against immediately adopting a uniform system throughout this country was not based upon an impulse of the moment, but was made after careful consideration and reconsideration during many years. If each one of us will strive for a perfect system, some of us may eventually reach such a degree of perfection as that the system may well be made uniform throughout this country; but we are at present far from having reached that perfection.

His report had dealt strictly with the subject of "blank forms," etc., as it had been assigned to him; but the discussion of his report had largely concerned the methods of collection of vital statistics and what facts should be collected. If he had felt at liberty to have considered these last-mentioned subjects, many items that he had not referred to would have been touched upon in his report.

The subject was also discussed by Doctors Hibberd, Cretcher, Metcalf, Conn, Salomon and Germer.

On motion of Dr. Salomon, the whole subject was referred back to the committee with instructions to report at the next meeting of the conference, including, also, a uniform method of collecting the statistics.

At the meeting of the conference in Washington, a resolution offered by Dr. Henry B. Baker, of Michigan, was, on his motion, referred to this meeting for discussion. The resolution is as follows :

"*Resolved*, That it now seems probable that progress can be made in the restriction of that disease which in this country causes more deaths than any other disease, namely, consumption, by declaring to the people that care should be taken to destroy or disinfect the sputa from persons suffering from pulmonary consumption."

In opening the discussion, Dr. Baker said he had prepared, but would not take the time of the conference to read, memoranda of recent literature on the subject, embracing examples of direct infection by tubercule, and other considerations tending to show the importance of the disinfection of tuberculous matter. He assumed that all present were familiar with the literature of the subject, and so would proceed to practical questions which we must consider. As a reminder of the importance of consumption as a cause of death, he exhibited a diagram (page 119, Report of the Rhode Island State Board of Health, 1885,) of the comparative mortality from fifteen most important causes of death in Rhode Island during the twenty-five years—1860–1884, inclusive—showing that the deaths from consumption in that State were more than twice as many as from the next most important cause of

death. The question before us was, he thought, whether we were all agreed that consumption can probably be lessened by efforts in this direction. If we are, the sooner the work begins the better; but if we are not, perhaps more harm than good will result by one or more State Boards of Health teaching the people to make such efforts. If the majority of those who control the State Boards of Health are skeptical, and will not support a movement in this direction, then we must delay action; but if the conference is strong in the belief that something can be done for the prevention of this most important of all diseases, then his view was that the work for its prevention should immediately begin. He would vote for the adoption of the resolution.

If the resolution shall be adopted, a practical question then is, "How shall we disinfect?" Dr. Baker read from a letter received from Dr. George M. Sternberg, as follows:

"In reply to your letter of September 2d, I would say that I consider the subject referred to one of prime importance. I am decidedly in favor of the adoption of the resolution introduced by you at the last meeting of the conference of State Boards of Health.

"I consider the oxidizing disinfectants the most useful for the purpose indicated, inasmuch as they destroy the albuminous material in which the bacilli are imbedded and thus permit the disinfecting agent, if present in sufficient quantity, to act directly upon the bacilli and insure their destruction.

"Labarraque's solution, or a solution of chloride of lime, used in sufficient quantity to completely dissolve and destroy by oxidation the sputa and the contained bacilli, seem to me to be the most useful agents for this purpose. So far as cheapness and efficient action are concerned we can scarcely ask for anything better than a solution of chloride of lime containing eight ounces to the gallon of water."

The subject was discussed by Drs. Plunkett, Lee and Hibberd, and the resolution was unanimously adopted.

The committee to whom was referred the paper by Dr. Metcalf was called upon to report, but the chairman, who had the report in his custody, was absent.

It was voted that the president and secretary be authorized to receive the report and deal with it in the name of the conference.

Dr. Salomon moved that a committee be appointed to draft a constitution and set of by-laws, and report at the next annual meeting.

The motion was adopted, and the following committee appointed: Dr. L. F. Salomon, of Louisiana; Dr. Henry B. Baker, of Michigan; Dr. J. D. Plunkett, of Tennessee.

On motion of Dr. Salomon it was voted to assess each State and province, represented at the conference, five dollars to meet incidental expenses.

Dr. Metcalf offered on behalf of the Indiana State Board of Health,

to publish 3,000 copies of the proceedings at a very low figure, and the offer was gratefully accepted.

The following officers were elected for the ensuing year :

President, Dr. J. N. McCormack, Bowling Greene, Kentucky.

Secretary and Treasurer, Dr. G. P. Conn, Concord, New Hampshire.

The conference adjourned to meet at 5 o'clock P. M., Thursday, October 7.

THURSDAY, OCTOBER 7.—5 O'CLOCK P. M.

The conference met according to adjournment.

Mr. E. C. Jordan, C. E., presented the following report of the committee appointed to consider the subject of the plumbing of the new capitol building of Indiana :

The committee to whom the following interrogatories from the State Board of Health of Indiana in relation to the plumbing of their State House were referred, beg leave to report as follows :

The questions are—

"*First*—Should a passage of a brick sewer under a building for human habitation be approved ?

"*Second*—Should earthenware drain pipes be used within the walls of a building for the purpose of conveying sewage ?

"*Third*—Should iron waste pipes from urinals and washstands connect earthen pipes within a building ?

"*Fourth*—Is the venting of soil pipes into brick flues and chimneys admissible ?

"*Fifth*—Is it not as necessary for traps to urinals and washstands to be vented as those of water closets ?

"*Sixth*—Should soil pipe be provided with fresh air inlets ?

"*Seventh*.—Should the sewage of a building be deposited within its foundation walls ?"

Your committee would state that it feels it unnecessary to answer categorically the above questions. There are certain principles in house plumbing that we believe to be upon a solid basis and dangerous to depart from. The foremost of them is that in the removal of the sewage it shall be done through the medium of heavy iron pipes proportioned to the work to be done, starting from a point at least five (5) feet exterior to the walls of the house, and extending from that point through the house and cut of the top to a height determined by surrounding circumstances. Its course should be as direct as possible, and its position, where its inspection would at all times be a matter of observation ; in other words, as much in sight as possible.

The question of any trap upon the outfall may be debatable, but your committee think it desirable and especially so from the fact that certain advantages claimed for its absence are much more fully realized by the fresh-air inlet. Your committee consider the fresh-

air inlet an essential. Its action is two-fold. The current of air which it stimulates is a preventive to the formation of gases, and is a medium of safe removal of such as may form. The arrangement of the inlet to prevent freezing is easily provided for, and such a difficulty is in no sense a valid objection to its use. In regard to the large sewer, a part of the city system, we are at a loss to understand the necessity of its location within the walls of the State House building, but if such is the case it undoubtedly should be of heavy iron pipe. Bricks and cement mortar furnish but an imperfect opposition to the passage of sewer gas, and their use within the walls of a habitation as a container, as is the case in a large unventilated sewer, or as both container and conductor, as when the soil pipe is entered into a chimney flue, is of the most reprehensible character.

The data in the fifth question, for its specific application in this case, are insufficient. In general terms it would be answered in the affirmative. We have not thought it necessary to discuss to any considerable degree the reasons for our condemnation of the methods pursued in the Indiana State House, or for those recommended, because it is common knowledge to those who have made themselves competent to judge that the principles in the first case are known to be and found to be vitally defective, while on the other hand those recommended may be considered to have passed through the speculative and experimental period and become fairly fundamental.

We commend the action of the State Board of Health of Indiana in its endeavors to bring about a correction of the errors so manifest in the principles that appear to have guided the plumbing of their new State House, and upon its insistence that the plumbing of its State buildings should always conform to and keep pace with the advances made in sanitary science.

All of which is respectfully submitted.

E. C. JORDAN, C. E.  
WM. CANNIFF, M. D.  
G. B. THORNTON, M. D.

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It was voted to hold the next annual meeting of the conference at Washington, D. C., in September, during the season of the International Medical Congress. Dr. Ralph Walsh was appointed chairman of local committee arrangements.

Adjourned.

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Sanitary Authorities and Associations of the United States of America and Canada.

*American Public Health Association.*—Dr. George M. Sternberg, U. S. A., Baltimore, Md., president; Dr. Irving A. Watson, Concord, N. H., secretary.

*National Conference of State Boards of Health.*—Dr. J. N. McCormack, Bowling Green, Ky., president; Dr. Granville P. Conn., Concord, N. H., secretary.

*Sanitary Council of the Mississippi Valley.*—Dr. John H. Rauch, Springfield, Ill., secretary.

*United States Marine Hospital Service.*—Dr. John B. Hamilton, Washington, D. C.

#### STATE BOARDS OF HEALTH.

*Alabama.*—[The Alabama State Medical Association constitutes the State Board of Health.]

Dr. Jerome Cochran, Montgomery, health officer.

*California.*—Dr. Henry S. Orme, Los Angeles, president; Dr. G. G. Tyrrell, Sacramento, secretary; Dr. James Simpson, 234 Post st., San Francisco; Dr. R. Beverly Cole, 218 Post st., San Francisco; Dr. W. R. Cluness, Sacramento; Dr. H. C. Crowder, Williams; Dr. J. M. Briceland, Shasta.

*Connecticut.*—Hon. A. E. Burr, Hartford, president; Prof. C. A. Lindsley, M. D., New Haven, secretary; Dr. J. S. Butler, Hartford; Prof. Wm. H. Brewer, New Haven; Dr. G. H. Wilson, Meriden; Hon. E. Johnson, Hartford; Dr. R. S. Goodwin, Thomaston.

*Delaware.*—Dr. L. P. Bush, Wilmington, president; Dr. E. B. Fraser, Wilmington, secretary; Dr. William Marshall, Milford; Dr. John K. Kane, Wilmington; Dr. George G. Chamberlain, Middleton; Dr. Albert Whiteley, Frederica; Dr. Edward Fowler, Laurel; Dr. David L. Mustard, Lewes; Dr. Wm. T. Skinner, Glasgow.

*Illinois.*—Newton Bateman, LL. D., Galesburg, president; Dr. John H. Rauch, Chicago, secretary; Dr. A. L. Clark, Elgin, treasurer; Dr. W. A. Haskell, Alton; Dr. W. R. Mackenzie, Chester; Dr. G. N. Kreider, Springfield; Dr. R. Ludlam, Chicago; A. W. H. Reen, Peoria.

*Indiana.*—Dr. Samuel R. Seawright, Lafayette, president; Dr. C. N. Metcalf, Indianapolis, secretary and executive officer; Dr. Wm. Lomax, Marion; Dr. W. A. Fritsch, Evansville; Dr. S. S. Boots, Greenfield.

*Iowa.*—Dr. Wm. S. Robertson, Muscatine, president; Dr. J. F. Kennedy, Des Moines, secretary; L. F. Andrews, assistant secretary; Andrew J. Baker, attorney general, ex-officio; M. Stalker, State veterinary surgeon, Ames, ex-officio; Dr. Wilmot H. Dickinson, Des Moines; Dr. S. B. Olney, Fort Dodge; Dr. Justin M. Hull, Sioux City; Dr. Philip W. Lewellen, Clarinda; Dr. Ephraim M. Reynolds, Centerville; Henry H. Clark, McGregor; James L. Loring, C. E., Dallas Center.

*Kansas.*—Dr. G. H. T. Johnson, Atchison, president; Dr. J. W. Redden, Topeka, secretary; Dr. C. H. Guibor, Beloit; Dr. D. Surber, Perry; Dr. D. W. Stormont, Topeka; Dr. J. Milton Welch, Wichita;



Dr. H. S. Roberts, Manhattan; Dr. J. W. Jenny, Salina; Dr. W. L. Schenck, Osage City; Dr. J. F. Lewis, Howard.

*Kentucky*.—Dr. Pinckney Thompson, Henderson, president; Dr. J. N. McCormack, Bowling Green, secretary; Dr. Robert Walker, Scottsville; Dr. J. O. McReynolds, Elkton; Dr. W. L. Breyfogle, Louisville; Dr. J. A. Lucy, Georgetown; Dr. J. M. Poyntz, Richmond.

*Louisiana*.—Dr. Joseph Holt, president, New Orleans; Dr. L. F. Salomon, New Orleans, secretary; Charles E. Kells, D. D. S., New Orleans; Dr. Ludwig H. Von Gohren, New Orleans; Dr. Samuel R. Olliphant, New Orleans; Hon. Joseph A. Shakspeare, New Orleans; Joseph Kohn, Esq., New Orleans; John J. Barr, Esq., New Orleans; Hon. Albert Voorhies, New Orleans; John J. Mellon, Esq., New Orleans.

*Maine*.—Dr. Frederic H. Gerrish, Portland, president; Dr. A. G. Young, Augusta, secretary; Hon. Lewis Barker, Bangor; Hon. Stephen J. Young, Brunswick; Dr. O. A. Horr, Lewiston; E. C. Jordan, C. E. Portland; Dr. J. O. Webster, Augusta.

*Maryland*.—Dr. Jackson Piper, Towson, president; Dr. C. W. Chancellor, Baltimore, secretary and executive officer; J. Crawford Neilson, C. E., Baltimore; Dr. J. M. H. Bateman, Easton; Dr. John Morris, Baltimore; Dr. James A. Steuart, health commissioner of Baltimore city, Baltimore, ex-officio; Hon. Charles B. Roberts, attorney general, ex-officio, Westminster.

*Massachusetts*.—Dr. Henry P. Walcott, Cambridge, chairman; Dr. Samuel W. Abbott, Wakefield, secretary; Dr. Elijah U. Jones, Taunton; Julius H. Appleton, Springfield; Thornton K. Lothrop, Esq., Beverly Farms; Dr. Frank W. Draper, Boston; Hiram F. Mills, C. E., Lawrence; James White, Boston; F. P. Stearns, C. E., engineer.

*Michigan*.—Dr. John Avery, Greenville, president; Dr. Henry B. Baker, Lansing, secretary; Dr. Arthur Hazelwood, Grand Rapids; Dr. Victor C. Vaughan, Ann Arbor; Dr. C. V. Tyler, Bay City; Dr. Henry F. Lyster, Detroit; Dr. John H. Kellogg, Battle Creek.

*Minnesota*.—Dr. D. W. Hand, St. Paul, president; Dr. Charles N. Hewitt, Red Wing, secretary; Dr. V. Smith, Duluth; Dr. Franklin Staples, Winona; Dr. E. J. Davis, Mankato; Dr. Ch. Gronvold, Norway; Dr. W. H. Leonard, Minneapolis.

*Mississippi*.—Dr. E. P. Sale, Aberdeen, president; Dr. Wirt Johnson, Jackson, secretary; Dr. F. W. Dancy, Holly Springs; Dr. D. L. Phares, Agricultural College; Dr. J. M. Taylor, Corinth; Dr. W. F. Hyer, Holly Springs; Dr. John Wright, Sardis; Dr. S. V. D. Hill, Macon; Dr. B. F. Kittrell, Black Hawk; Dr. J. H. Blanks, Meridian; Dr. J. P. Moore, Yazoo City; Dr. Robert Keels, Jackson; Dr. J. W. Bennett, Brookhaven; Dr. R. T. Edwards, Vicksburg; Dr. R. S. Toombs, Greenville.

*Missouri*.—Wm. Gentry, Sedalia, president; Dr. Albert Merrell, St. Louis, vice president; Dr. George Homan, St. Louis, secretary;

Dr. J. D. Griffith, Kansas City, treasurer; Dr. George M. Cox, Springfield; James B. Prather, Maryville; Dr. G. A. Goben, Kirksville.

*New Hampshire.*—Dr. Granville P. Conn, Concord, president; Dr. Irving A. Watson, Concord, secretary and executive officer; Governor Moody Currier, Manchester, ex-officio; Hon. James A. Weston, Manchester, attorney general; Hon. Daniel Barnard, Franklin, ex-officio; Dr. Elwin T. Hubbard, Rochester.

*New Jersey.*—Dr. C. F. Brackett, Princeton, president; Dr. Ezra M. Hunt, Trenton, secretary; F. A. Osborn, C. E., recording clerk, Middletown; Hon. Henry C. Kelsey, secretary of State, ex-officio; Hon. John P. Stockton, attorney general, ex-officio; George H. Cook, State geologist, ex-officio; F. S. Atwater, Esq., Elizabeth; Dr. Laban Dennis, Newark; Dr. Franklin Gauntt, Burlington; Prof. A. R. Leeds, Ph. D., Hoboken.

*New York.*—Dr. William E. Millbank, Albany; Dr. Lewis Balch, Albany, secretary; Dr. George W. Cooke, Kingston; Dr. Woolsey Johnson, New York city; Dr. Alfred Mercer, Syracuse; Dennis O'Brien, attorney general, ex-officio; Dr. William M. Smith, health officer port of New York, ex-officio; Hon. Thomas Newbold, Poughkeepsie; Prof. Maurice Perkins, Schenectady.

*North Carolina.*—Dr. J. W. Jones, Tarboro', president; Dr. Thomas F. Wood, Wilmington, secretary and treasurer; Dr. R. H. Lewis, Raleigh; Dr. John McDonald, Washington; Dr. R. L. Payne, Lexington; Dr. S. H. Lyle, Franklin; Dr. W. D. Hilliard, Asheville; Prof. W. G. Simmons, Wake Forest; Arthur Winslow, C. E., Raleigh.

*Ohio.*—Dr. W. H. Cretcher, Bellefontaine, president; Dr. C. O. Probst, Columbus, secretary; Dr. H. J. Sharp, London; Dr. John D. Jones, Cincinnati; Dr. T. Clarke Miller, Massillon; Dr. Simon P. Wise, Millersburg; Dr. D. H. Beckwith, Cleveland; Dr. Thomas C. Hoover, Columbus.

*Pennsylvania.*—Dr. Edward Wm. Germer, Erie, President; Dr. Benj. Lee, Philadelphia, secretary; Dr. Pemberton Dudley, Philadelphia; Dr. David Engleman, Easton; Dr. J. F. Edwards, Philadelphia; Rudolph Hering, C. E.; Dr. J. H. McClelland, Pittsburgh.

*Rhode Island.*—Dr. H. E. Turner, Newport, president; Dr. C. H. Fisher, Providence, secretary; Dr. George W. Jenckes, Woonsocket; Dr. A. G. Sprague, River Point; Dr. T. H. Shipman, Bristol; S. M. Gray, C. E., Providence; Dr. H. W. Rose, Westerly.

*South Carolina.*—Dr. F. F. Gary, Abbeville, chairman, Dr. H. D. Fraser, Charleston, secretary; Dr. J. Ford Prioleau, Charleston; Dr. P. A. Wilhite, Anderson; Dr. T. Grange Simons, Charleston; Dr. C. R. Taber, Fort Motte; Hon. C. Richardson Miles, attorney general; Hon. Wm. E. Stoney, comptroller general; Dr. J. R. Bratton, Yorkville.

*Tennessee.*—Dr. J. D. Plunket, Nashville, president; Dr. Jas M. Safford, vice president; Dr. J. Berrien Lindsley, Nashville, secretary;

Hon. E. W. Cole, Nashville; Dr. G. B. Thornton, Memphis; Hon. D. P. Hadden, Memphis; Dr. P. D. Sims, Chattanooga; Dr. Daniel F. Wright, Clarksville.

*Texas*.—Dr. R. M. Swearingen, Austin, State health officer.

*Vermont*.—Dr. A. H. Chessmore, Huntington, president; Dr. C. L. Allan, Rutland, secretary; Dr. J. H. Hamilton, Richford.

*Wisconsin*.—Dr. Solon Marks, Milwaukee, president; Dr. J. T. Reeve, Appleton, secretary; Dr. G. F. Witter, Grand Rapids; Dr. Knut Hoegh, La Crosse; Dr. B. O. Reynolds, Lake Geneva; Prof. W. W. Daniells, Madison; Dr. S. C. Johnson, Hudson.

*Ohio State Sanitary Association*.—Dr. R. Harvey Reed, Mansfield, secretary.

*Provincial Board of Health of Ontario*.—Dr. Charles W. Covernton, Toronto, chairman; Dr. Peter H. Bryce, Toronto, secretary; Dr. William Oldright, Toronto; Dr. Horace P. Yeomans, Mount Forest; Dr. Francis Rae, Oshawa; Dr. John J. Cassidy, Toronto; John Galbraith, C. E., Toronto.

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## II. REPORT OF CONFERENCE ON SANITATION HELD AT PITTSBURGH, OCTOBER 11, 1886.

By THOMAS M. MCFARLAND, Esq., *Secretary*.

Pursuant to a call by J. H. McClelland, M. D., member of the State Board of Health, an informal conference in the interest of sanitary reform was held, at the suggestion of Benjamin Lee, M. D., Secretary of the State Board, at the parlors of the Monongahela House, on Monday, October 11, 1886, at 11 o'clock A. M.

Present: Dr. Benjamin Lee, Secretary of the State Board of Health; Health Officer Gray, Prof. Blanck, Health Officer Bradley, L. H. Hunter, Inspector State Board of Health; E. J. Small, attorney for Braddock's borough; Dr. J. C. McCormick, South Side; John Paul, councilman; Jacob F. Slagle, Esq., of the Pittsburgh Board of Health; Dr. Huselton, of Allegheny; Dr. R. Jennings, Jr., Thomas Lindsay, meat and milk inspector; C. A. Newton, Burgess of West Elizabeth borough; Dr. J. C. Dunn, president, and Thomas M. McFarland, attorney of the Pittsburgh Board of Health.

Jacob F. Slagle, Esq., was elected chairman and Thomas M. McFarland, Esq., secretary of the conference.

The Secretary of the State Board of Health, Dr. Lee, explained the objects of the conference which were to discuss questions brought before the State Board by different local boards in western Pennsylvania. More complaints had been made within a radius of thirty miles of Pittsburgh than in any other part of the State, and it was, therefore, necessary to learn as much as possible of the causes of these

complaints. Although the board of health of Pittsburgh was, in his estimation, as progressive as any board in the country, he considered that more satisfactory results could be reached by the State Board in these matters through personal interviews than by correspondence.

Crosby Gray, health officer of Pittsburgh, gave a brief history of the epidemics that have occurred more especially on the South Side, giving what he believed to be the principal causes of the same as follows: Lack of proper sewerage, imperfect drainage, water supply not of the best quality, water supplies from wells not above suspicion and the want of a regular system of disposing of garbage.

Dr. Lee here suggested that garbage could be readily cremated by natural gas.

Mr. John Paul considered it the duty of the city authorities to provide for a system of removing garbage, free of expense to the citizens. Dr. Huselton, of Allegheny board of health, said that a small crematory for burning garbage in connection with the Allegheny City market house worked satisfactorily.

Professor Hugo Blanc, of the college of pharmacy, gave some very interesting data of certain tests he had made relative to sanitary matters.

Health Officer John Bradley, of Allegheny City, was interrogated principally as to the sanitary condition of Spring Garden Run and the condition of the Schinderies in Spring Garden borough. He replied that of late there had been very few complaints and very little sickness in that portion of the city.

E. J. Small, attorney for Braddock's borough, said the local board there had been instrumental in abating a great many nuisances, but that a fat-rendering establishment and certain slaughter houses were still the sources of intolerable annoyances.

Inspector L. H. Hunter, verified Mr. Small in his statements, having visited and thoroughly inspected that locality.

Austin Newton, burgess of West Elizabeth borough and president of local board of health, gave a detailed statement of the recent epidemic at West Elizabeth. He said their local board of health had adopted the "Model Ordinance of the State Board of Health," and that they had succeeded in placing the borough in an excellent sanitary condition, notwithstanding adverse reports. This was accomplished by prompt and vigorous work and the punishing of those violating the laws. "By having the State Board to back us," he added, "we succeeded more than we possibly could have done by ourselves."

Meat and Milk Inspector, Thomas W. Lindsay, and Inspector Hunter, reported the results of their visits to West Elizabeth borough and vicinity.

Inspector Hunter reported in regard to the complaint made to the State Board from New Castle, that the nuisance there, consisting of

stagnant water on Cochran alley and South street, was being abated by means of a twenty-four inch sewer. Health Officer Samuel C. Nickline, of New Castle, having sent information that the work was about completed.

Major Slagle spoke of the importance of the questions involved and thought that action taken in sanitary matters should be reasonable and practicable, that the use of abattoirs would dispose largely of nuisances arising from slaughter houses and that there should be a system adopted for the removal of garbage.

The necessity of a good and general system of sewerage on the South Side and East End was spoken of at length.

Dr. Lee, Secretary of the State Board, referred to the advisability of having boards of health established in townships as well as in boroughs throughout the State.

Thomas M. McFarland, attorney for the board of health of Pittsburgh, spoke of the legal powers of the State Board and also of local boards of health.

He observed that while such boards might be more efficient if additional powers were granted them, yet there were ample legal powers in the case of most of the complaints made to boards of health to enable them to remedy the evils complained of. In the exceptional cases where they cannot be reached by the laws governing boards of health they certainly can be reached by indictment. The speaker further said that the State Board should be given a larger appropriation to enable the board to engage efficient inspectors, that inspectors were the working force of the board and by a thorough inspection by them of localities having no boards of health great good could undoubtedly be accomplished.

Dr. J. C. Dunn, president of the Pittsburgh board of health, also referred to the importance of the State Board securing a larger appropriation and of having still greater powers. He pledged the hearty coöperation of the Pittsburgh board in aiding the State board.

After Dr. Jennings had been interrogated by Dr. Lee as to his duties and powers as an officer of the State Board of Agriculture in reference to diseased cattle, with a view to determining to what extent coöperation would be possible between himself and the inspector of the State Board of Health, in the event of an inroad of pleuropneumonia or other infectious disease in domestic animals, the conference adjourned.

## APPENDIX M.

### OCCASIONAL CIRCULARS IN CYCLOSTYLE.

1. To Superintendents of Public Schools.
2. To Members of Congress from Pennsylvania.
3. To Physicians.
4. To Mayors of Cities.
5. To Chief Burgesses.
- 6 & 7. To Members of the Pennsylvania Legislature.
8. To Mayors and Burgesses.
9. To authorities of Towns on the Schuylkill River.
10. To Presidents of County Medical Societies.
11. To Officers of County Medical Societies.
12. To Bishops in Pennsylvania.
13. To Officers of County Medical Societies.
14. To the Clergy of the Diocese of Pittsburgh.
15. To the Clergy of the Diocese of Central Pennsylvania.
16. To the Clergy under the jurisdiction of Archbishop Ryan.
17. To the Clergy in the Diocese of Pennsylvania.
18. To Boards of Health in Pennsylvania.
19. To Mayors and Burgesses.
20. To the Public Press.
21. To the Clergy in the Diocese of Bishop O'Hara.
22. To the Press.
23. To the Clergy in the Diocese of Bishop Mullen.
24. To Clergy of the M. E. Church, under the jurisdiction of Bishop Mallalieu.
25. To Secretaries of State Boards of Health.

I. Circular addressed to the superintendents of public schools in Pennsylvania, January 1, 1886, accompanying circulars on the prevention of cholera and small-pox, requesting their distribution to every chairman of the board of school directors and every teacher in the State.

II. Circular addressed to members of Congress from Pennsylvania, January, 1886, urging the necessity for national health legislation, and requesting their support.

III. Circular addressed to physicians in each county, January 19, 1886, urging them to write at once to their representatives in Congress, to support measure for national health legislation.

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#### IV. CIRCULAR ADDRESSED TO THE MAYORS OF CITIES, ACCOMPANYING CIRCULARS ON CHOLERA AND SMALL-POX.

STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *January 28th, 1886.*

*To His Honor the Mayor of . . . . . :*

DEAR SIR: Your attention is respectfully called to the enclosed circulars, with the request that you will bring the subject to which

they refer to the notice of your city councils, urging upon them the importance of sustaining your board of health in every measure designed to place your city in good sanitary condition before the advent of the hot season, or, in case no such board exists, of at once establishing it in conformity with the provisions of the acts of May 25th, 1874, or of April 11th, 1876.

I shall esteem it a favor if you will forward at once to this office, a full list of members of your board, and of all officers charged with sanitary duties, together with the plan of organization, rules and other documents and information relative to its work.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE,

*Secretary.*

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V. CIRCULAR ADDRESSED TO ALL CHIEF BURGESSES IN THE COMMONWEALTH OF PENNSYLVANIA, ACCOMPANYING CIRCULARS ON SMALL-POX AND CHOLERA.

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STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *January 15th, 1886,*

*Chief Burgess,*

DEAR SIR: Your attention is respectfully called to the enclosed circulars, with the request that you will bring the subjects to which they refer before your council. It is of the first importance that every borough council in the State should at once assume the powers and enter upon the discharge of the duties assigned to it by law, as the protector of the lives and health of the community over which it has jurisdiction. In this connection I would refer you to section 2, of the act of April 3d, 1851, where you will find these powers and duties clearly defined.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE,

*Secretary.*

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VI. and VII. Circulars addressed to members of State Legislature, February 5, 1886, accompanying circulars on cholera and small-pox, requesting them to influence the councils of cities and boroughs, inducing them to effect a sanitary organization, and, also, requesting them to write to Pennsylvania members of Congress with reference to national health legislation.

VIII. CIRCULAR ADDRESSED TO ALL MAYORS OF CITIES IN THE COMMONWEALTH OF PENNSYLVANIA ACCOMPANYING RESOLUTIONS OF THE BOARD.

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STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *Feb. 5, 1886.*

DEAR SIR: I have the honor to transmit to you the following resolutions passed by the State Board of Health at its last regular meeting, with the request that you will bring the subjects to which they refer to the attention of your councils.

Yours very respectfully,

BENJAMIN LEE, *Secretary.*

*Resolved.* That this Board is convinced that the local boards of health of this State, and particularly of our large cities, are seriously crippled in their official work by the insufficiency of funds; and that we earnestly recommend to the proper authorities the expediency of very materially increasing the appropriations of money to these boards, as a measure of public economy, as well as of public safety.

*Resolved,* That it is the sense of this Board that typhoid fever should be added to the list of disease which are required by law to be reported to the health officer as being of a contagious or infectious character.

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IX. CIRCULAR ADDRESSED TO THE MAYORS OF ALL CITIES AND THE BURGESSES OF ALL BOROUGHES, SITUATED ON THE SCHUYLKILL RIVER, ACCOMPANYING RESOLUTION OF THE BOARD.

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STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *Feb. 20, 1886.*

DEAR SIR: Allow me to call your attention to the following resolutions passed by the State Board of Health at its last regular meeting, and to request you to aid me in accomplishing the important result at which they aim by furnishing me, as early as may be convenient, the following data.

First. What are the sources from which excrementitious matter may find its way in the Schuylkill river, in or near the limits of your municipality, naming each dwelling and manufacturing establishment, or, if sewers exist, their location, and population using them?

Second. What are the means by which such entrance could be prevented?

Third. What steps are being taken to adopt these means?

Fourth. What would be the probable expense entailed by them?

I have the honor to be,

Yours respectfully,

BENJAMIN LEE, *Secretary.*



WHEREAS, The Schuylkill river is used for drinking water by the cities of Philadelphia, Conshohocken, Norristown, Phoenixville and Pottstown; and

Whereas, A large amount of excrementitious matter is now allowed to enter the river, which is dangerous to the health of each of the above communities; therefore,

*Resolved*, That the executive officer of the board be instructed to take such steps as may be necessary to prevent the entrance of excrementitious matter into the Schuylkill river above the city of Philadelphia.

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X. Circular addressed to the presidents of county medical societies, March 5, 1886, requesting them to call a special meeting of their societies and pass resolutions supporting the national health legislation, and send them to their Representatives and Senators in Congress with the names of the officers and members appended.

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**XI. CIRCULAR ADDRESSED TO THE SECRETARIES OF COUNTY MEDICAL SOCIETIES IN THE COMMONWEALTH OF PENNSYLVANIA.**

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STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, PHILADELPHIA.

DEAR DOCTOR: It is a matter of considerable importance that a complete register of the physicians of Pennsylvania should appear in the first annual report of our board. The prothonotary of your county, however, declines to perform the labor of copying the register on the ground that the law does not compel him to do so. But I have no doubt that he would allow you access to his books in order to make a transcript yourself. The necessary blanks issued by me, are in his office. Will you not, associating with yourself two or three medical friends if necessary, do me the favor to obtain a copy of his record and let me have it at as early a date as possible.

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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XII. Circular addressed to the bishops of the various churches in Pennsylvania, March 28, 1886, requesting them to send a note of approbation of the work and objects of the State Board of Health and lists of the clergy of their dioceses accompanying copy of circular to the clergy.

XIII. Circular addressed to the presidents or treasurers of county medical societies of Pennsylvania, April 14, 1886, accompanying petition to be sent to the House of Representatives and Senate, signed by influential citizens of their counties, petitioning Congress to enact national health legislation.

XIV. Circular addressed, April 5, 1886, to the clergy in the diocese of Bishop Whitehead. Letter from Bishop Whitehead expressing his approbation of the work and objects of the State Board of Health, accompanying "circular to the clergy" and other circulars.

XV. Circular addressed, April 21, 1886, to the clergy in the diocese of Bishop Howe, with letter from Bishop Howe expressing his approbation of the work and objects of the Board of Health, accompanying "circular to the clergy" and other circulars.

XVI. Circular addressed, April 7, 1886, to the clergy in the archiepiscopate of Archbishop Ryan, with letter from Archbishop Ryan expressing his approbation of the work and objects of the State Board of Health, accompanying "circular to the clergy" and other circulars. Copies made, 296; copies sent, 296.

XVII. Circular addressed, April 3, 1886, to the clergy in the diocese of Bishop Stevens, with letter expressing his approbation of the work and objects of the State Board of Health, accompanying "circular to the clergy" and others. Copies made, 210; copies sent, 210. Circular No. 25.

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**XVIII. CIRCULAR ADDRESSED TO ALL BOARDS OF HEALTH IN  
THE COMMONWEALTH OF PENNSYLVANIA.**

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STATE BOARD OF HEALTH, EXECUTIVE OFFICE,  
PHILADELPHIA, *April 30, 1886.*

*To the President and Board of Health of . . . :*

GENTLEMEN: I am informed that copies of the Report of the National Board of Health for 1885 have been delivered to the Senators and Representatives for distribution. It would be well for you to make formal application at once to the member from your district for such number of copies of this document as you may need.

Yours respectfully,

(Signed)

BENJ'N LEE, *Secretary.*

**XIX. CIRCULAR ADDRESSED TO ALL MAYORS OF CITIES AND BURGESSES OF BOROUGHES IN THE COMMONWEALTH OF PENNSYLVANIA ACCOMPANYING MODEL ORDINANCE.**

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STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, PHILADELPHIA.

DEAR SIR: I enclose a copy of a model sanitary ordinance adopted by this Board for the guidance of municipal authorities throughout the State, with the request that you will take an early opportunity to bring it to the notice of your council and urge its adoption, with such modifications as your and their wisdom may suggest. Uniformity in health legislation in all our cities and boroughs will make it doubly effective. I also desire you to observe that the enclosed regulation for slaughter houses, etc., gives your council the control of the districts immediately outside of the corporate limits, and authorizes you to require all such establishments to obtain a permit from you in order to carry on their business. Your council would do well therefore to prepare a book in which such permits could be recorded, and to assign the duty of issuing and recording the same to a particular clerk, to be called the permit clerk.

I have the honor to be, yours respectfully,  
(Signed)

BENJ'N LEE, *Secretary.*

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XX. Circular addressed to newspapers, stating that the spring meeting of the State Board of Health will take place at Philadelphia, and announcing the subjects to be discussed before the Sanitary Convention in connection with it.

XXI. Circular addressed to the clergy in the diocese of Bishop O'Hara, April, 1886, with letter from Bishop O'Hara expressing his approbation of the work and objects of the State Board of Health, accompanying circular to the clergy and other circulars.

XXII. Circular addressed to the public press, stating the objects, work and transacted business of the Board during the year preceding.

XXIII. Circular addressed to the clergy in the diocese of Erie, accompanying printed circulars and letter of Bishop Mullen expressing his approbation of the work and objects of the State Board of Health.

XXIV. Circular addressed to the clergy of the Methodist Episcopal Church, accompanying printed circulars and letter from Bishop W. F. Mallalieu, expressing his approbation of the work and objects of the board.

XXV. Circular addressed to secretaries of State Boards of Health, notifying them of the existence of cases of small-pox in this State.

## APPENDIX N.

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### CIRCULARS AND FORMS.

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1. Blanks for the Registration of Marriages : for the use of Clerks of Orphans' Courts.
2. Blanks for the Registration of Physicians : for the use of Prothonotaries.
3. Form of Affidavit for the Registration of Physicians.
4. Regulation in regard to the Abatement and Removal of Nuisances.
5. Circular addressed to the Clerical Profession.
6. Provisional Regulations for Slaughter Houses, Bone-boiling Establishments, etc., amended.
7. Form of Permit for Bone-boiling Establishments, etc.
8. Model Ordinance for the Better Preservation of the Public Health in Cities and Boroughs.
9. Model Rules for Boards of Health in Cities and Boroughs.
10. Blank Form of Instructions to Inspectors.



## NOTICE TO CLERKS OF ORPHANS' COURTS IN PENNSYLVANIA.

AN ACT relating to marriage licenses, providing for officers herein indicated to issue licenses to parties to marry.

SECTION 1. *Be it enacted, &c.*, That from and after the first day of October, Anno Domini one thousand eight hundred and eighty-five, no person within this Commonwealth shall be joined in marriage until a license shall have been obtained for that purpose from the clerk of the orphans' court in the county where the marriage is performed, which said license shall be in form as follows, to wit:

STATE OF PENNSYLVANIA, }  
COUNTY OF . . . . . } ss:

*To any minister of the gospel, justice of the peace, or other officer or persons authorized by law to solemnize marriage:*

You are hereby authorized to join together, in the holy state of matrimony, according to the rights and ceremonies of your church, society, or religious denomination, and the laws of the Commonwealth of Pennsylvania, A—— B—— and C—— D——.

Given under my hand and seal of the orphans' court of said county of \_\_\_\_\_, at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, Anno Domini one thousand \_\_\_\_\_, *Clerk.*

For which said license the said clerk shall receive the sum of fifty cents.

The license shall have appended to it two certificates, numbered to correspond with the said license (one marked original and one marked duplicate), which shall be in form as follows:

I hereby certify, that on the \_\_\_\_\_ day of \_\_\_\_\_, one thousand \_\_\_\_\_, at \_\_\_\_\_, and \_\_\_\_\_ were, by me, united in marriage, in accordance with license issued by the clerk of the orphans' court of \_\_\_\_\_ county, Pennsylvania, numbered \_\_\_\_\_.

(Signed)

*Minister of the Gospel, Justice of the Peace or Alderman.*

And the certificate marked "original" shall, by the person solemnizing the marriage, be given to the person married, and the certificate marked "duplicate" shall be returned to the clerk of the orphans' court of the proper county, as provided in section four of this act: *Provided*, That in all cases in which the parties intended solemnizing their marriage themselves, no such marriage shall take place until the clerk of the orphans' court of the proper county shall certify their right so to do in declaration in the following form:

To A—— B—— and C—— D——.

Legal evidence having been furnished to me, in accordance with the act of Assembly approved the \_\_\_\_\_ day of \_\_\_\_\_, one thousand eight hundred and eighty-five, this certifies that I am satisfied there is no legal impediment to you joining yourselves together in marriage.

A—— B——, *Clerk.*

And in lieu of the certificate above given, there shall be appended to such declaration, two certificates in the following form :

We hereby certify that on the \_\_\_\_\_ day of \_\_\_\_\_ one thousand eight hundred \_\_\_\_\_, we united ourselves in marriage at \_\_\_\_\_, in county of \_\_\_\_\_, having first obtained, from the clerk of the orphans' court of said county, a declaration that he was satisfied that there was no existing legal impediment to our so doing.

A\_\_\_\_\_ B\_\_\_\_\_,  
C\_\_\_\_\_ D\_\_\_\_\_.

We the undersigned were present at the solemnization of the marriage of A\_\_\_\_\_ B\_\_\_\_\_ and C\_\_\_\_\_ D\_\_\_\_\_ as set forth in the foregoing certificate.

D\_\_\_\_\_ E\_\_\_\_\_,  
E\_\_\_\_\_ F\_\_\_\_\_.

SECTION 2. The clerk of said court shall procure, at the cost of the proper county, and keep a suitable book in his office and among his records, to be called the marriage license docket, in which he shall make a complete record of the issuing of said licenses, and all the matters, which he shall be required to ascertain, relative to the rights of said parties to obtain said license, together with their ages and residences.

SECTION 3. The clerk of said court shall inquire, of the parties applying for marriage license as aforesaid, on oath, or affirmation, relative to the legality of said contemplated marriage; and if there shall be no legal impediment thereto, then he shall grant such marriage license; and if any of the persons intending to marry, by virtue of said license, shall be under twenty-one years of age, the consent of their parents, or guardians shall be personally given, before said clerk, or certified under the hand of such parent or guardian, attested by two adult witnesses, and the signature of said parent or guardian shall be properly acknowledged before a notary public, or other officer competent under the law to receive acknowledgments, which said certificate and oath shall be filed of record in said office, and entry of the same shall be made, by said clerk, on the marriage license docket, as a part of the records of the issuing of said license; and for which he shall receive as his fees the sum of fifty cents, in addition to the marriage license fee. And if any clerk of any of said courts shall, in any other manner, issue, or sign any marriage license, he shall forfeit and pay any sum not exceeding one thousand dollars to and for the use of the party aggrieved.

SECTION 4. The certificate provided for, marked "duplicate," in section one of this act, shall by the persons solemnizing said marriage be returned, duly signed to the clerk of the orphans' court, who issued the license within thirty days after the solemnizing of said marriage, and the said clerk upon the reception of any certificate as provided for herein, shall immediately enter the same on the docket, where the

marriage license of said person is recorded; or if the marriage be solemnized by the parties themselves, the certificate of such marriage shall be signed by them, attested by two witnesses, and filed with said clerk as aforesaid, and said certificate shall be filed among the records of his office; and every minister, justice or other person, who shall neglect, or refuse to transmit said certificate to said clerk, within the time prescribed by this act, shall forfeit and pay the sum of fifty dollars; and the clerk, who shall neglect or refuse to make such record, without any additional fee, shall also forfeit and pay the sum of fifty dollars. Said fines and forfeitures to be for the use of the county in which said marriage license was granted.

SECTION 5. If any minister, justice, or any other officer, or person shall solemnize the marriage ceremony, or shall be attesting witnesses to the same within this Commonwealth, without said person having first obtained the proper license as hereinbefore mentioned and set forth, he or they, so officiating or attesting, shall forfeit and pay the sum of one hundred dollars, to, and for the use of, the county in which said marriage was solemnized.

SECTION 6. A certified copy of the record of said marriage license and certificate, under the hand of said clerk and seal of said court, shall be received in all courts of this Commonwealth, as *prima facie* evidence of said marriage between the parties therein named.

SECTION 7. Any fine, or forfeiture arising to the county, or any party, person or persons, in consequence of the violation of any of the preceding sections of this act, shall be recovered by an action of debt, in the name of said party, or persons, or county as plaintiffs, in the same manner as other debts are recoverable by law, with the usual costs, in any court of record in any county of this Commonwealth, in which the defendant or defendants shall be found.

SECTION 8. Section two of the act of February fourteenth, one thousand seven hundred and thirty, entitled "A supplement to the act for preventing clandestine marriages," shall be and the same is hereby repealed, and all laws and parts of laws inconsistent herewith are hereby repealed.

APPROVED—The 23d day of June, A. D. 1885.

ROBT. E. PATTISON.

*Extract from an Act to create a State Board of Health, approved the 3d day of June, A. D. 1885.*

SECTION 7. It shall be the duty of the State Board of Health and Vital Statistics to have the general supervision of the State system of registration of marriages, to prepare the necessary methods, forms and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the Capital of the State. The



said Board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The secretary of the State Board of Health and Vital Statistics shall be the superintendent of registration of vital statistics. As supervised by said board, the clerical duties and safe keeping of the bureau of vital statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said board shall require in the discharge of such duties.

**NOTICE**—The State Board of Health would solicit the coöperation of all registers and clerks of orphans' courts, and of all clergymen, magistrates and other persons by or before whom the marriage ceremony is solemnized, to lend their aid in carrying out the requirements of the law for the registration of marriages.

The value of a registration law must be appreciated by every intelligent citizen. The want of one has caused wrong and injustice to many, while its existence will establish important truths, in regard to the physical welfare of our people.

A supply of blank certificates for gratuitous distribution to all persons whose duty it is to make returns under the above dated act is kept constantly on hand at the Central Bureau of Vital Statistics and may be procured at any time on application.

Returns to be made on the first of April, July, October and January.

CENTRAL BUREAU VITAL STATISTICS,

*Department of Internal Affairs, State Capitol, Harrisburg.*

BENJAMIN LEE, M. D.,

*Superintendent of Registration of Vital Statistics.*

II.  
BLANK FOR THE REGISTRATION OF PRACTITIONERS OF MEDICINE AND SURGERY.

COMMONWEALTH OF PENNSYLVANIA—STATE BOARD OF HEALTH.

*Returns to be made on the first of July Annually.*

RETURN OF PRACTITIONERS OF MEDICINE AND SURGERY in the county of . . . . . from the . . . . . day of . . . . .  
to the . . . . . day of . . . . . 188 , made to the SUPERINTENDENT OF VITAL STATISTICS, in accordance with the State Laws,  
by . . . . . Prothonotary, . . . . . Residence, . . . . .

[illegible]

## NOTICE TO PROTHONOTARIES IN PENNSYLVANIA.

AN ACT to provide for the Registration of all Practitioners of Medicine and Surgery.

SECTION 1. *Be it enacted, &c.*, That the prothonotary of each county shall purchase a book of suitable size, to be known as the medical register of the county (if such book has not been purchased already), and shall set apart one full page for the registration of each practitioner; and when any practitioner shall depart this life, or remove from the county, he shall make a note of the same at the bottom of the page, and shall perform such other duties as are required by this act.

SECTION 2. Every person who shall practice medicine or surgery, or any of the branches of medicine or surgery for gain, or shall receive or accept for his or her services as a practitioner of medicine or surgery any fee or reward, directly or indirectly, shall be a graduate of a legally chartered medical college or university having authority to confer the degree of doctor of medicine (except as provided for in section five of this act), and such persons shall present to the prothonotary of the county in which he or she resides or sojourns his or her medical diploma, as well as a true copy of the same, including any indorsements thereon, and shall make affidavit before him that the diploma and indorsements are genuine; thereupon, the prothonotary shall enter the following in the register, to wit: The name in full of the practitioner, his or her place of nativity, his or her place of residence, the name of the college or university that has conferred the degree of doctor of medicine, the year when such degree was conferred, and in like manner any other degree or degrees that the practitioner may desire to place on record, to all of which the practitioner shall likewise make affidavit before the prothonotary, and the prothonotary shall place the copy of such diploma, including the endorsements, on file in his office for inspection by the public.

SECTION 3. Any person whose medical diploma has been destroyed or lost shall present to the prothonotary of the county in which he or she resides or sojourns a duly certified copy of his or her diploma, but, if the same is not obtainable, a statement of this fact, together with the names of the professors whose lectures he or she attended, and the branches of study upon which each professor lectured, to all of which the practitioner shall make affidavit before the prothonotary, after which the practitioner shall be allowed to register in matter and form as indicated in section two of this act, and the prothonotary shall place such certified statement on file in his office for inspection by the public.

SECTION 4. Any person who may desire to commence the practice of medicine or surgery in this State after the passage of this act, having a medical diploma issued, or purporting to have been issued, by any college, university, society, or association in another State or

foreign country, shall lay the same before the faculty of one of the medical colleges or universities of this Commonwealth for inspection; and the faculty being satisfied as to the qualifications of the applicant and the genuineness of the diploma, shall direct the dean of the faculty to indorse the same, after which such person shall be allowed to register as required by section two of this act.

SECTION 5. Any person who has been in the continuous practice of medicine or surgery in this Commonwealth since one thousand eight hundred and seventy-one without the degree of doctor of medicine shall be allowed to continue such practice, but such person shall nevertheless appear before the prothonotary of the county in which he or she resides, and shall present to him a written statement of these facts, to which the practitioner shall make affidavit. Thereupon, the prothonotary shall enter the following in the register, to wit: The name in full of the practitioner, his or her place of nativity, his or her place of residence, the time of continuous practice in this Commonwealth, and the place or places where such practice was pursued, to all of which the practitioner shall likewise make affidavit, and the prothonotary shall place the certified statement on file in his office for inspection by the public.

SECTION 6. Every practitioner who shall be admitted to registration shall pay to the prothonotary one dollar, which shall be compensation in full for registration, and the prothonotary shall give a receipt for the same.

SECTION 7. Any practitioner who shall present to the faculty of an institution for indorsement or to a prothonotary a diploma which has been obtained fraudulently, or is in whole or part a forgery, or shall make affidavit to any false statement to be filed or registered, or shall practice medicine or surgery without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and, on conviction, shall be punished for each and every offense by a fine of one hundred dollars, one-half to be paid to the prosecutor and the other half to be paid to the county, or be imprisoned in the county jail of the proper county for a term not exceeding one year, or both or either, at the discretion of the court.

SECTION 8. Nothing in this act shall be so construed as to prevent any physician or surgeon legally qualified to practice medicine or surgery in the State in which he or she resides from practicing in this Commonwealth; but any person or persons opening an office, or appointing any place where he or she may meet patients or receive calls, shall be deemed a sojourner, and shall conform to the requirements of this act.

SECTION 9. This act shall take effect on the first day of June, one thousand eight hundred and eighty-one.

SECTION 10. That all acts or parts of acts heretofore passed, and inconsistent with this act, be and the same are hereby repealed.

APPROVED—The 8th day of June, A. D. 1881.

*Extract from an act to Create a State Board of Health, approved the 3d day of June, 1885.*

SECTION 7. It shall be the duty of the State Board of Health and Vital Statistics to have the general supervision of the State system of registration of practitioners of medicine and surgery, to prepare the necessary methods, forms, and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the Capital of the State. The said Board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The Secretary of the State Board of Health and Vital Statistics shall be the Superintendent of Registration of Vital Statistics. As supervised by said Board, the clerical duties and safe keeping of the Bureau of Vital Statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said Board shall require in the discharge of such duties.

NOTICE.—The State Board of Health would solicit the coöperation of all prothonotaries, physicians, medical societies and medical colleges to lend their aid in carrying out the requirements of the law for the registration of physicians.

The value of a registration law must be appreciated by every intelligent citizen. The want of one has caused wrong and injustice to many, while its existence will establish important safe-guards to the physical welfare of our people.

A supply of blank certificates for gratuitous distribution to all persons whose duty it is to make returns under the above-dated act is kept constantly on hand at the Central Bureau of Vital Statistics, and may be procured at any time on application.

Returns to be made on the 1st of July, annually.

CENTRAL BUREAU OF VITAL STATISTICS,

*Department of Internal Affairs, State Capitol, Harrisburg.*

BENJAMIN LEE, M. D.,

*Superintendent of Registration of Vital Statistics.*

### III. FORM OF AFFIDAVIT TO REGISTRATION OF PHYSICIANS.

(Affidavit to accompany each Annual Return.)

COMMONWEALTH OF PENNSYLVANIA. } ss :  
COUNTY OF . . . . . }

Personally appeared before me, . . . . .  
notary public or justice of the peace of . . . . .  
county, . . . . . prothonotary of the court of common pleas  
of said county and State, who, being duly . . . . . according to  
law, deposes and says that the foregoing registrations are correct and  
true ; that he personally inspected the diplomas and endorsements  
therewith presented, and believed them to be genuine ; and that the  
copies of the same, also presented for file in the said court (No. . . ),  
are true in every particular, and in accordance with the act of As-  
sembly entitled, "An act to provide for the registration of all prac-  
titioners of medicine and surgery," approved June 8th, A. D. 1881.

. . . . . and subscribed before me, }  
this . . . . day of . . . . A. D. 18 . . . }  
*Notary Public or Justice of the Peace.* }

### IV. ABATEMENT OF NUISANCES.

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

#### *Regulation in Regard to the Abatement and Removal of Nuisances.*

Whenever a complaint is made in writing to the Secretary of the Board of the existence of a nuisance, he shall forthwith, as Executive Officer of the Board, investigate the matter, and shall determine whether the alleged nuisance is detrimental to the public health, or the cause of any special disease or mortality ; and in case he shall so find, then he shall notify the owner, agent, or occupier of said premises, in writing, of such finding, and the Executive Officer shall thereupon order and direct the abatement and removal of the same within . . . days ; and in the event of the failure of said owner, agent, or occupier of said property to abate and remove the nuisance, then the Executive Officer shall proceed to abate and remove the same, and shall employ all the force necessary to do so, and shall proceed by

warrant, arrest, and indictment to convict the party failing to obey said order of abatement and removal.

By order of the Board.

(Signed)

BENJ. LEE, *Secretary,*  
*Executive Office, Philadelphia.*

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## V. CIRCULAR ADDRESSED TO THE CLERICAL PROFESSION.

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[Circular No. 17.]

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, PHILADELPHIA, *March 1, 1886.*

REVEREND AND DEAR SIR : The State Board of Health of the Commonwealth of Pennsylvania is desirous of securing all possible coöperation on the part of those who inhabit the Commonwealth, to enable it fully to perform the weighty duties with which the general assembly has charged it.

Any and every class of intelligent persons, widely diffused through the State, can render valuable aid, in

(a.) Disseminating information as to certain important yet simple facts ; and

(b.) Impressing, by example, their own appreciation of the value of those facts.

No class can better aid in maintaining a good condition of public health than can the clerical profession, because of their widespread influence professionally ; their general intelligence, and their opportunities for personal influence in individual cases of ignorance or neglect of the fundamental principles of health which come under their observation.

Those fundamental principles are extremely simple, but their very simplicity causes them to be too generally overlooked. They include :

1. Fresh air and abundant ventilation.
2. Water free from impurity, and wholesome, unadulterated food, properly prepared.
3. Scrupulous cleanliness of habitations and their surroundings, including proper drainage ; and
4. Cleanliness of person and clothing.

It is neglect of these requirements which produces or maintains most diseases and pestilences.

The clergy can aid the State Board of Health by pointing out and illustrating these essential principles of hygiene, either in public by lectures, or by instruction given privately as occasion may offer.

When it is remembered that a prominent position was given to hygienic precepts in the Mosaic law, and that in the New Testament

one great feature of the Redeemer's work was healing the sick, it will be seen that the patriotic duty of both *preventing* and *curing* sickness, where it can be done, is elevated into the higher sphere of what is confessedly a part of religion, and therefore within the province of its ministers.

Any information which the Board can give to aid you in responding intelligently to its appeal for coöperation, will be very gladly furnished.

Yours with great respect,

BENJAMIN LEE,  
*Secretary.*

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## VI REGULATIONS FOR SLAUGHTER HOUSES, ETC.

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### COMMONWEALTH OF PENNSYLVANIA, STATE BOARD OF HEALTH.

*Provisional regulations for preventing slaughter houses, stock yards, hog-pens, bone-boiling and fat-rendering and other similar establishments from being or becoming prejudicial to the public health.*

#### NUISANCES DEFINED.

1. Whatever is dangerous to human life or health, and whatever renders soil, air, water or food impure or unwholesome, are declared to be nuisances and to be illegal; and every person having aided in creating or contributing to the same, or who may support, continue or retain any of them, shall be deemed guilty of a violation of these regulations.

#### HOUSE-REFUSE, GARBAGE, ETC.

2. No house-refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste-substance of any kind, shall be thrown upon any street, road, ditch, gutter, or public place, and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining out-buildings for more than twenty-four hours.

#### NOXIOUS TRADES.

3. No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit or exhalations are generated, within one mile of the limits of any city or borough, without the permit of the Board of Health or borough council of said city or borough, and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health, nor shall any offensive or deleterious waste-substance, refuse or injurious matter be allowed to accumulate upon the pre-



mises or be thrown or allowed to run into any public waters, streams, watercourse, street, road or public place. And every person or company conducting such manufacture or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

4. The business of bone and horse-boiling shall not be allowed, unless conducted under cover, the building to be provided with smoke-consumers, and a due regard be had to cleanliness in the disposition of the offal. No bone-boiling establishment or depository of dead animals shall be kept or erected in any part of this Commonwealth which is not under the jurisdiction of a local board of health, without a permit from the Board of Health or borough council of the nearest city or borough.

5. No permit shall be granted to any person or persons to carry on the business of boiling bones and dead animals until after a careful inspection of the locality, buildings and apparatus, and of the plans for conducting the business, by an accredited inspector of the State Board of Health, or, if such inspector be not accessible, then by an inspector appointed for the purpose by the Board of Health or borough council of the nearest city or borough.

6. No bone-boiling establishments or depositories of dead animals shall be kept or erected in or near to a thickly inhabited neighborhood.

7. The floors of all bone-boiling establishments and depositories of dead animals shall be paved with asphalt or with brick or stone, well laid in cement, or with some other impervious material, and shall be well drained. All such establishments shall have such an adequate water supply as will enable thorough cleanliness to be maintained.

8. The boiling of bones and dead animals, etc., shall be conducted in steam tight kettles, boilers or caldrons, from which the foul vapors shall first be conducted through scrubbers or condensers, and then into the back part of the ash-pit of the furnace fire, to be consumed, or by other apparatus equally efficient in preventing or counteracting the offensive effluvia.

9. When bones are being dried after boiling they shall be placed in a close chamber, through which shall be passed, by means of pipes, large volumes of fresh air, the outlet pipe terminating in the fire-pit.

10. All proprietors of bone-boiling establishments not having, on the first day of July, 1886, permits to carry on the business, and violating these regulations, shall be liable to prosecution for failing to obey this order and also to an indictment at common law for creating and maintaining a nuisance.

11. The permit clerk of each local board of health or borough council shall have provided a book in which to enter the names of all persons engaged in the business of boiling bones and having depositories

of dead animals, also, the location of works and appliances as reported by the inspector, whether licensed or not, the number and date of permit, and remarks.

12. No person or persons, without the consent of the board of health or borough council of the nearest city or borough shall build or use any slaughter house within the limits of this Commonwealth; and the keeping and slaughtering of all cattle, sheep and swine, and the preparation and keeping of all meats, fish, birds or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food; and every butcher or person owning, leasing or occupying any place, room or building wherein any cattle, sheep or swine have been or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room or building, stable or market, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter to be removed therefrom at least once in every twenty-four hours after the use thereof for any of the purposes herein referred to, and shall also at all times keep all woodwork, save floors and counters, in any building, place or premises aforesaid, thoroughly painted or white-washed; and the floors of such building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath.

13. No blood-pit, dung-pit, offal-pit or privy-well shall remain or be constructed within any slaughter-house. Any one offending against this rule shall be guilty of creating and maintaining a nuisance prejudicial to the public health, and shall be required to remove the nuisance within ten days from the date of notice.

14. The owners, agents, or occupiers of all slaughter-houses are required, during the months of June, July, August and September to distribute twice in each week not less than twenty-five pounds of chloride of lime about the premises, and also to remove the contents of any manure-pit or manure pile on the premises, once in each week, the said premises and contents of manure-pits being hereby declared to be nuisances prejudicial to the public health, unless subject to frequent disinfection and cleaning as herein indicated.

15. *All constables and supervisors are enjoined, and all citizens are respectfully desired, to give information to the State Board of Health of any violation of the health laws, or of the regulations of the Board, so that the sanitary measures adopted by the latter to ensure the health of the people may be fully carried out, and all offenders promptly punished.*

BENJ'N LEE, M. D.,

November 1, 1885.

*Secretary and Executive Officer.*

NOTE.—Section 6 of the act of June 3, 1885, confers upon the State Board of Health power and authority to order nuisances to be abated and removed in cities, boroughs, districts and places having no local board of health. All persons violating or failing to obey such order, becomes liable on conviction to a fine of one hundred dollars.

# VII. FORM OF PERMIT FOR BONE BOILING ESTABLISHMENTS, SLAUGHTER HOUSES, ETC.

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

*License to manufacture compost, boil dead animals, bones, fat and fish, or carry on the business of slaughtering animals.*

No. . . . . Harrisburg, . . . . . 188

of the . . . . . having applied for a license to

and having complied with all the requisitions of the law, and the rules and regulations of the State Board of Health, and having also given assurances, . . . . . for the faithful performance of all the duties enjoined upon . . . . . hereby licensed to . . . . . for one year commencing July 1st, 18 . . . , provided, however, that if in the meantime . . . shall not conform to and obey the law, and the rules and regulations of the State Board of Health, the license hereby granted may be revoked or annulled.

Secretary and Executive Officer.

## VIII. MODEL ORDINANCE.

(Circular No. 10.)

COMMONWEALTH OF PENNSYLVANIA,  
STATE BOARD OF HEALTH.

*Model Ordinance for the better Preservation of the Public Health in Cities and Boroughs in Pennsylvania.*

The State Board of Health desires respectfully to call the attention of all *Councils of Cities and Boroughs* in this Commonwealth to the fact that they are by law endowed with absolute powers for the protection of the lives and health of the communities over which they preside. If the Legislature has not made the exercise of these powers compulsory, it is simply because it could not conceive of bodies of intelligent men, occupying positions of such grave responsibility, neglecting duties so obvious. The Board is convinced that cases of entire forgetfulness of these obligations are extremely rare; but its inquiries lead it to conclude that in but few municipalities is their full extent appreciated, while from not a few have requests come for definite instructions and information in detail in regard to them. The

board has, therefore, felt itself called upon to draft a sanitary ordinance which may be adopted by any city or borough, with such modifications, omissions or additions as local circumstances, charter provisions or existing regulations may suggest, and which it herewith respectfully submits, bespeaking for it the attentive and earnest consideration of all upon whom these responsibilities devolve. Appended will be found copies of the existing laws upon the subject.

BENJAMIN LEE,  
*Secretary.*

EXECUTIVE OFFICE, *April 15, 1886.*

Ordinance of the . . . . . of . . . . . for the better Preservation of the Public Health, and to prevent the spread of Communicable Diseases.

\*IN VIRTUE OF THE POWERS CONFERRED BY . . . . .  
. . . . .

OF THE LAW OF THE COMMONWEALTH OF PENNSYLVANIA, *Be it ordained by the* † . . . . . *Council of the* . . . . .  
*of* . . . . . *and it is hereby ordained by the authority of the same.*

SECTION 1. That whatever is dangerous to human life or health, whatever renders the air or food or water or other drink unwholesome, and whatever building, erection, or part or cellar thereof, is overcrowded, or not provided with adequate means of ingress and egress, or is not sufficiently supported, ventilated, sewerred, drained, cleaned or lighted, are declared to be nuisances, and to be illegal; and every person having aided in creating or contributing to the same, or who may support, continue or retain any of them, shall be deemed guilty of a violation of this ordinance, and also be liable for the expense of the abatement and remedy therefor.

*Nuisance defined.*

SECTION 2. No house refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste substance of any kind, shall be thrown on any street, road, ditch, gutter or public place within the limits of this . . . . , and no putrid or decaying animal or vegetable

*House refuse, garbage, etc., not to be exposed.*

\* In the case of a city, introduce here the words "the Act of Assembly of May 24th, 1887, Article XV, P. L. 238." In the case of a borough, introduce the words "the Act of Assembly of April 3d, 1851, Section 1, P. L. 320;" and in the case of either, if there is any special Act of Assembly creating a Board of Health for said city or borough or conferring specific sanitary powers, introduce also a reference to such act. When the words "Board of Health" (or "Borough Council") occur, retain that which is appropriate and omit the other.

† In the case of a city this blank will be filled with the words "Select and Common;" in the case of a borough with the words "Burgess and."

matter shall be kept in any house, cellar or adjoining out-building or grounds for more than twenty-four hours.

Slaughter houses,  
cattle yards, hog  
pens, etc., to be  
kept clean.

SECTION 3. No person or persons, without the consent of the Board of Health (or Borough Council) shall build or use any slaughter house within the limits of this . . . , and the keeping and slaughtering of all cattle, sheep and swine, and the preparation and keeping of all meat, fish, birds or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food; and every butcher or other persons owning, leasing or occupying any place, room or building wherein any cattle, sheep or swine have been, or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room or building, stable or market, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage refuse and unwholesome and offensive matter to be removed therefrom at least once in every twenty-four hours, after the use thereof for any of the purposes herein referred to, and shall also at all times keep all woodwork, save floors and counters, in any building, place or premises aforesaid thoroughly painted or whitewashed; and the floors of such building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath.

SECTION 4. No blood-pit, dung pit, offal-pit or privy-well shall remain or be constructed within any slaughter-house. Any one offending against this rule shall be guilty of creating and maintaining a nuisance prejudicial to public health, and shall be required to remove the nuisance within ten days from the date of notice.

SECTION 5. The owners, agents, or occupiers, of all slaughter-houses are required, during the months of June, July, August and September to distribute twice in each week not less than twenty-five pounds of chloride of lime about their premises, and also to remove the contents of any manure-pit or manure-pile on the premises, once in each week, the said premises and contents of manure-pits being hereby declared to be nuisances prejudicial to public health, unless subjected to frequent disinfection and cleaning as herein indicated. No pigs or hogs shall be kept in the same enclosure with a slaughter-house; nor shall they be

fed, there or elsewhere, upon the offal of slaughtered animals.

SECTION 6. No person or company shall erect or maintain within the limits of this . . . . any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit or exhalations are generated, such as tanneries, refineries, manufactories of starch, glue, leather, chemicals, fertilizers, gas, etc., etc., without the permit of the Board of Health (or Borough Council) and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health; nor shall any offensive or deleterious waste-substance, refuse or injurious matter be allowed to accumulate upon the premises, or be thrown or allowed to run into any public waters, stream, water-course, street, road or public place. And every person or company conducting such manufacture or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

Bone boiling and other offensive trades—how to be conducted.

SECTION 7. The business of bone and horse-boiling shall not be allowed, unless conducted under cover, the building to be provided with smoke-consumers, and a due regard be had to cleanliness in the disposition of the offal. No bone-boiling establishment or depository of dead animals shall be kept or erected in any part of this . . . . without a permit from the Board of Health (or Borough Council.)

SECTION 8. No permit shall be granted to any person or persons to carry on the business of boiling bones and dead animals until after a careful inspection of the locality, buildings and apparatus, and of the plans for conducting the business, by an accredited Inspector of the Board of Health (or borough council.)

SECTION 9. No bone-boiling establishments or depositories of dead animals shall be kept or erected in or near to a thickly inhabited neighborhood.

SECTION 10. The floors of all bone-boiling establishments and depositories of dead animals shall be paved with asphalt or with brick or stone, well laid in cement, or with some other impervious material, and shall be well drained; and all such establishments shall have such an adequate water supply as will enable thorough cleanliness to be maintained.

SECTION 11. The boiling of bones and dead animals, etc., shall be conducted in steam tight kettles, boilers or caldrons, from which the foul vapors shall first be conducted through scrubbers or condensers, and then into the back part of the ash-pit of the furnace fire, to be consumed, or by other apparatus equally efficient in preventing or counteracting the offensive effluvia.

SECTION 12. When bones are being dried after boiling, they shall be placed in a close chamber, through which shall be passed by means of pipes, large volumes of fresh air, the outlet pipe terminating in the fire-pit.

SECTION 13. All proprietors of bone-boiling establishments not having on the . . . . . day of . . . . . permits to carry on the business, and violating these ordinances, shall be fined for every such offense, and for each month's continuance of the same, after notice, and also be liable to an indictment at common law for creating and maintaining a nuisance.

SECTION 14. The Permit Clerk of the Board of Health (or borough council) shall have provided a book in which to enter the names of all persons engaged in the business of boiling bones and having depositories of dead animals; also, the location of works and appliances as reported by the Inspector; whether licensed or not; the number and date of permit; and remarks.

SECTION 15. The keeper or keepers of a livery or other stable shall keep his or their stable and stable-yard clean, and shall not permit, between the 15th day of May and the 1st day of November, more than . . . wagon loads of manure to accumulate in or near the same at any one time, except by express permission of the Board of Health (or borough council), nor shall any manure be removed between the dates aforesaid, except between twelve o'clock at night and two hours after sunrise, without a written permit from the Board of Health (or borough council), nor shall any manure be removed except in a tight vehicle, so protected that the manure, in process of removal, may not be dropped or left in any street, road, lane or way of the . . . . .

SECTION 16. No pig pen shall be built or maintained within the limits of this . . . . . without a permit from the Board of Health (or borough council), or within one hundred feet of any well or spring of water used for drinking purposes, or within thirty feet of any street or of any inhabited house, or unless constructed in the following manner, viz: so that the floor or floors

Stables to be kept clean.

Pig pens to be properly constructed and kept clean.

of the same shall be not less than two feet from the ground, in order that the filth accumulating under the same may be easily removed; and such filth accumulating in, about and under the same shall be removed at least once a week and oftener if so ordered, and on the failure of any owner or occupier of such premises so to do, then the same shall be done by the . . . .

SECTION 17. No privy vault, cess-pool or reservoir into which a privy, water closet, cess-pool, stable or sink is drained, unless it is water-tight shall be constructed, dug or permitted to remain within one hundred and fifty feet of any well, spring or other source of water used for drinking or culinary purposes, unless the surface of such vault, cess-pool or reservoir is at a lower level than the bottom of such well. Earth privies and earth closets, with no vault, pit or depression below the surface of the ground, shall be excepted from this regulation, but sufficient dry earth or coal ashes must be used daily to absorb all the fluid part of the deposit, and the contents must be completely removed at least once every month.

Privies not to remain near wells of drinking water.

SECTION 18. All privy vaults, cess pools or reservoirs as above named, shall be cleaned out at least twice a year, once in the spring not later than the 15th of May, and once in the autumn not earlier than the 15th of October. From the 15th of May to the 15th of October of each year, they shall be thoroughly disinfected by adding to their contents, once every week, from one to four gallons of a disinfectant solution, according to the size of the said vault, cess-pool or reservoir.

To be frequently cleaned and disinfected.

SECTION 19. All sewer drains shall be water-tight within the limits of this . . . . .

SECTION 20. No sewer drain shall empty into any lake, pond or other source of water used for drinking purposes, or into any standing water, within the jurisdiction of this . . . . .

Sewer drains not to contaminate water supply.

SECTION 21. The sewage from each building on every street provided with a common sewer, shall be conducted into said sewer.

SECTION 22. That portion of the house drain which is outside of the building and more than four feet from the foundation walls, shall be constructed of iron pipe or vitrified drain pipe.

House drains—how connected with sewers.

SECTION 23. That portion of the drain pipe outside or under the building, and within four feet of the founda-



tion walls, together with the soil pipe, shall be constructed of cast iron with lead joints, or of wrought iron pipe with screwed joints, and in either case protected from rust. The waste-pipe connected with the conductors from the roofs, and other pipes inside the building, or outside and within four feet of the foundation walls, shall likewise be constructed of cast iron with leaded joints, or of wrought iron with screwed joints.

SECTION 24. The house drain and other pipes for the conveyance of sewage shall be laid with uniform grade and with a fall of not less than one inch in four feet, except in those cases where the Board of Health (or borough council) may permit otherwise.

SECTION 25. All pipes connecting a water-closet with a soil pipe shall be trapped, each separately. All waste pipes shall be trapped, each separately, and close to the connections with each bath, sink, bowl or other fixture, unless adequate provision is made for downward ventilation through said waste pipes, in which case one trap may serve for several fixtures.

SECTION 26. All soil pipes shall be carried at their full size through the roof and left open. A provision shall also be made for admitting air to the house drain side of the main trap, if such trap exists.

SECTION 27. The joints in the vitrified pipe shall be carefully cemented under and around the pipe, and the joints in the cast iron pipe shall be run and calked with lead.

SECTION 28. All changes in direction shall be made with curven pipes. All joints and pipes shall be made air-tight. The whole work shall be done by skilful mechanics, in a thorough and workmanlike manner, and satisfactorily to the Board of Health (or borough council).

SECTION 29. Before proceeding to construct any portion of the drainage system of a hotel, tenement, dwelling house or other building, the owner, builder or person constructing the same, shall file with the Board of Health (or borough council) a plan thereof, showing the whole drainage system, from its connection with the common sewer to its terminus in the house, together with the location and size of all branches, traps, ventilating pipes and fixtures.

SECTION 30. All drains now built shall be reconstructed whenever, in the opinion of the Board of Health (or borough council), it may be necessary.

SECTION 31. The following named diseases are declared to be communicable and dangerous to the public health, viz : small pox (variola, varioloid), cholera (Asiatic or epidemic), scarlet fever (scarlatina, scarlet rash), measles, diphtheria (diphtheritic croup, diphtheritic sore throat), typhoid fever, typhus fever, yellow fever, spotted fever (cerebro-spinal meningitis), relapsing fever, epidemic dysentery, hydrophobia (rabies), glanders (farcy), and leprosy, and shall be understood to be included in the following regulations, unless certain of them only are specified.

Diseases dangerous to public health enumerated.

SECTION 32. Whenever any householder knows that any person within his family or household has a communicable disease, dangerous to the public health, he shall immediately report the same to the Board of Health (or borough council), giving the street and number, or location of the house.

Householders required to report.

SECTION 33. Whenever any physician finds that any person whom he is called upon to visit has a communicable disease, dangerous to the public health, he or she shall immediately report the same to the Board of Health (or borough council), giving the street and number or location of the house, on the receipt of which report the . . . . . shall immediately notify the teacher or principal of every school, academy, seminary or kindergarten in the . . . . . requesting said teachers or principals to dispense with the attendance of all pupils residing in the family in which such disease exists. No physician who may, in good faith, in obedience to this ordinance, report a case as one of communicable disease which subsequently proves not to be such, shall be liable to a suit for damages for such error in reporting. It shall be the duty of such physician and of all other attendants upon persons affected with such diseases to avoid exposure to the public of any garments or clothing about their own persons that may have been subjected to the risk of infection.

Physicians required to report.

School teachers to be notified.

Physicians not to be sued for mistakes in obeying this regulation.

SECTION 34. No person shall, within the limits of this . . . . ., unless by permit of the Board of Health (or borough council), carry or remove from one building to another any patient affected with any communicable disease, dangerous to the public health. Nor shall any person, by any exposure of any individual so affected, or of the body of such individual, or of any article capable of conveying contagion or infection, or by any negligent act connected with the care or custody

Exposure of infected persons or things forbidden.

thereof, or by a needless exposure of himself or herself, cause or contribute to the spread of disease from any such individual or dead body.

**Funerals after infectious diseases forbidden.**

SECTION 35. There shall not be a public or church funeral of any person who has died of Asiatic cholera, small-pox, typhus fever, diphtheria, yellow fever, scarlet fever or measles, and the family of the deceased shall in all such cases limit the attendance to as few as possible, and take all precautions possible to prevent the exposure of other persons to contagion or infection; and the person authorizing the public notice of death of such person, shall have the name of the disease which caused the death appear in such public notice.

**Public notice of cause of death required.**

**Public conveyances not to be infected.**

SECTION 36. No person suffering from, or having very recently recovered from, small-pox, scarlet fever, diphtheria, yellow fever, or measles, shall expose himself, nor shall any one expose any one under his charge in a similar condition, in any conveyance, without having previously notified the owner or person in charge of such conveyance of the fact of such condition as above stated. It shall be the duty of the Board of Health (or borough council) to have this section printed on a card, and to furnish the owner of each public conveyance with a copy thereof; and it shall be the duty of the owner of such conveyance to display such card in such conveyance. And the owner or person in charge of such conveyance must not, after the entry of any person so infected into his conveyance, allow any other person to enter it without having sufficiently disinfected it under the direction of the Board of Health (or borough council).

**Infected conveyances not to be used until disinfected.**

**Infected houses or rooms not to be let.**

SECTION 37. No person shall let or hire any house, or room in a house, in which a communicable disease, dangerous to the public health, has recently existed, until the room or house and premises therewith connected have been disinfected to the satisfaction of the Board of Health (or borough council); and for the purposes of this section, the keeper of a hotel, inn or other house for the reception of lodgers, shall be deemed to let or hire part of a house to any person admitted as a guest into such hotel, inn or house.

**Isolation of families required.**

SECTION 38. Members of any household in which small-pox, diphtheria, scarlet fever or measles exists, shall abstain from attending places of public amusement, worship or education, and as far as possible, from visiting other private houses.

SECTION 39. The clothing, bed clothing and bedding of persons who have been sick with any communicable disease, dangerous to the public health, and the rooms which they have occupied during such sickness, together with their furniture, shall be disinfected under the direction of the Board of Health (or borough council).

Disinfection required.

SECTION 40. No animal affected with a communicable disease, dangerous to the public health, shall be brought or kept within the limits of this . . . . . except by permission of the Board of Health (or borough council), and the bodies of animals dead of such disease or killed on account thereof shall not be buried within five hundred feet of any residence, nor disposed of otherwise than as the said Board, or council, or its health officer shall direct.

Infected animals to be excluded.

SECTION 41. No milk which has been watered, adulterated, reduced or changed in any respect from its natural condition by the addition of any foreign substance, shall be brought into, held, kept or offered for sale at any place in this . . . . .

Milk not to be adulterated.

SECTION 42. No meat, fish, birds, fowls, fruit, vegetables, milk, and nothing for human food, not being then healthy, fresh, sound, wholesome, fit and safe for such use, nor any animal or fish that died by disease, and no carcass of any calf, pig or lamb, which at the time of its death was less than three weeks old, and no meat therefrom shall be brought within the limits of this . . . . . or offered or held for sale as food anywhere in said . . . . .

No unwholesome food to be sold.

SECTION 43. It shall be the duty of the occupant of every house within the limits of this . . . . . in the month of May, in each and every year, to cleanse the cellars thereof of all dirt, vegetable and other impure matter calculated to engender disease, and to cause them to be thoroughly whitewashed with fresh lime.

Cellars to be cleansed.

SECTION 44. It shall be the duty of every adult and every parent, guardian or master of every minor, residing within the limits of this . . . . . who has not had small-pox, or been vaccinated so as to have taken cow-pox regularly, to be, if an adult, vaccinated, or, in the case of a minor, to cause such minor to be vaccinated within six months from the date of the passage of this ordinance, unless unable to do so by reason of poverty; and it shall be lawful for any regularly educated physician residing in this . . . . . on

Compulsory vaccination.

application of such resident adult, or parent, master or guardian of such resident minor, as are unable by reason of poverty to pay the vaccination fee, to vaccinate said adult or said minor, and present his bill therefor, properly authenticated, for an amount not exceeding the fee usually charged for such services, and to recover the same of and from the corporation.

Vaccination of  
school children re-  
quired.

SECTION 45. No pupil shall be allowed to attend the public schools in this . . . . . who has not been vaccinated successfully within seven years.

Period of isolation  
established for  
school children.

SECTION 46. No parent, guardian or master, in whose house or family there shall have been a communicable disease, dangerous to the public health, shall permit any child residing in said house or family to attend any public, private or Sunday school, after the cessation of said disease, within a period of ten days after the house shall have been thoroughly disinfected and cleansed. And it shall be the duty of the school board to have this section printed on cards, mentioning the names of diseases declared communicable and dangerous to the public health in this ordinance, and posted in every school room in this . . . . . ; and it shall be the duty of each teacher to read the section to the school at least once a month and whenever any epidemic shall appear. And it shall be the duty of the Board of Health (or borough council) to have this section printed on cards and furnished to every private school, academy, seminary, kindergarten and Sunday school in this . . . . . and to request the person or persons in charge of such private institutions to post such cards in conspicuous places, and read the section to the school at least once a month, and whenever any epidemic shall prevail.

Children to be in-  
structed in regard  
to danger of infec-  
tion.

Certificates of  
death and burial  
permits.

SECTION 47. Every undertaker or other person who may have charge of the funeral of any dead person, shall procure a properly filled out certificate of the death and its probable cause, in accordance with the form prescribed by the State Board of Health; and shall present the same to the designated officer or member of the Board of Health, and obtain a burial or transit permit thereupon, at least twenty-four hours before the time appointed for such funeral; and he shall not remove any dead body until such burial or transit permit shall have been procured.

Sextons, cemetery  
keepers, etc.

SECTION 48. Every person who acts as a sexton or undertaker, or cemetery keeper, within the limits of

this . . . . . or has the charge or care of any tomb, vault, burying ground or other place for the reception of the dead, or where the bodies of any human beings are deposited, shall so conduct his business and so care for any such place above named, as to avoid detriment or danger to public health; and every person undertaking preparations for the burial of a body dead from communicable disease as hereinbefore enumerated, shall adopt such precautions as the Board of Health (or borough council) may prescribe to prevent the spread of such disease. No dead body shall be exhumed and removed between the months of May and October inclusive, and no body dead from small-pox shall ever be exhumed and removed.

SECTION 49. Every person violating sections 3, 6, 7, 8, 9, 10, 11, 12, 13, 32, 33, 34, 35, 36, 37, 39, 40, 41 or 42 of this ordinance, shall be liable, for every such offence, upon conviction before any burgess, justice or magistrate, to fine of not less than \$10 or more than \$100, at the discretion of the convicting burgess, justice or magistrate, besides costs, which the convicting burgess, justice or magistrate may inflict if he see fit.

Penalties to be inflicted.

SECTION 50. Every person violating any other section or provision of this ordinance, shall be liable, for every such offence, upon conviction before any burgess, justice or magistrate, to a fine of not less than \$3 or more than \$20, at the discretion of the convicting burgess, justice or magistrate, besides costs, which the convicting burgess, justice or magistrate may inflict if he see fit.

SECTION 51. All police officers, constables and watchmen are enjoined, and all citizens are respectfully desired, to give information to the Board of Health (or borough council) of any violation of these ordinances, so that the sanitary laws providing for the cleanliness and health of the . . . . . may be fully executed, and all offenders promptly punished.

#### Acts of Assembly Conferring Sanitary Powers on Borough Councils in Pennsylvania.

Every borough within this Commonwealth that hereafter may be incorporated by an act of the General Assembly, or by the court of quarter sessions of any county, shall have power—

2 April, 1881, § 1  
P. L. 320, corporate  
powers.

To make all needful regulations respecting the found-

Party walls, etc.

ations and party-walls of buildings, and respecting vaults, cess-pools, sinks, drains and partition fences.

**To enter on lands.** To enter upon the land and premises of any person or persons, for the purposes authorized by this act, by themselves and their duly-appointed officers and agents.

**Nuisances.** To prohibit and remove any obstructions in the highways of the borough, and any nuisance or offensive matter, whether in the highways or in public or private ground, and to require the removal of the same by the owner or occupier of such grounds; in default of which the corporation may cause the same to be done, and collect the cost thereof, with twenty per centum advance thereon, in the manner provided herein for the cost of pavements made by the corporation.

**Noxious and dangerous trades, etc. Storage of gunpowder, etc.** To prohibit within the borough the carrying on of any manufacture, art, trade or business which may be noxious or offensive to the inhabitants; the manufacture, sale or exposure of fire-works or other inflammable or dangerous articles, and to limit and prescribe the quantities that may be kept in one place of gunpowder, fire-works, turpentine and other inflammable articles, and to prescribe such other safeguards as may be necessary.

**Keeping of manure and hogs.** To make such regulations relative to accumulation of manure, composts and the like, in barns, stables, yards and other places, and to prohibit the keeping of hogs within the borough, or within such limits within the same as they may prescribe.

**Interments.** To prohibit within the borough the burial or interment of deceased persons, or within such partial limits within the same as they may from time to time prescribe, and to regulate the depths of graves.

**Health and cleanliness.** To make such other regulations as may be necessary for the health and cleanliness of the borough.

**Ibid, § 2. How enforced.** For the purpose of carrying this act into effect, every borough or incorporated town within this Commonwealth shall have power, by its proper officers, to pass such ordinances or by-laws as may be necessary for that purpose, and also to impose fines, to be collected by action of debt, or penalties, to be enforced by summary conviction, as for a breach of the peace, before any alderman, magistrate or justice of the peace of said boroughs or incorporated towns.

**Classification of Cities.**

The act of Assembly of May 24th, 1887, No. 144, divides the cities of the Commonwealth into seven classes according to population, as follows :

First class, containing a population of 600,000 or over.					
Second class, containing a population of 150,000 and under 600,000.					
Third class,	"	"	75,000	"	150,000.
Fourth class,	"	"	45,000	"	75,000.
Fifth class,	"	"	20,000	"	45,000.
Sixth class,	"	"	10,000	"	20,000.
Seventh class,	"	"	less than 10,000.		

**X. FORM OF INSTRUCTIONS TO INSPECTORS.**

STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, PHILADELPHIA, . . . . . 188 .

To . . . . . Inspector.

SIR :

You are hereby empowered and instructed to proceed, without unnecessary delay, to . . . . .

. . . . . County, and investigate the sanitary condition of

. . . . .  
. . . . .  
. . . . .

and to report to this office whether, in your opinion, the said . . . .  
. . . . . constitute a nuisance, prejudicial to the public health; and if so, what steps are necessary to be taken to abate the same.

By order of the Board,

. . . . .  
*Secretary and Executive Officer.*

**RULES OF THE BOARD OF HEALTH**

OF THE

. . . . .

OF

. . . . .

I. The Board shall be organized on the first . . . . in . . . . in each and every year, by the election of a president and secretary, to serve for the ensuing year.

II. The Board shall hold stated meetings on . . . . of every week, at . . o'clock, . . , and it may hold special meetings when convened by order of the president, or at the call of any two of its members.

III. The hours for the transaction of business of the health office shall be from . . . . . to . . . . . , Sundays excepted.



## THE PRESIDENT.

IV. The president shall preside at the meetings of the board, preserve order and decorum, and appoint the members of committees, unless otherwise directed.

V. In the absence of the president, a chairman for the meeting shall be appointed.

## THE SECRETARY.

VI. The secretary shall keep accurate minutes of the proceedings of the board, and conduct such correspondence as the board may direct and approve.

## ELECTIVE OFFICERS.

VII. At the first stated meeting in December of each year, there shall be elected a clerk, † an inspector, a physician to be health officer, a vaccine physician or physicians, and a sanitary policeman or policemen; all of whom shall enter upon their duties on the first day of January following, and continue in office until discharged by action of the board, or others are elected in their stead.

## COMMITTEES.

VIII. The following standing committees shall be appointed annually, at the first meeting after the organization of the board :

1. A sanitary committee, consisting of three members
2. A committee on office and library, consisting of one member.
3. A committee on burial grounds and registration, consisting of two members.
4. A committee on accounts, consisting of two members.
5. A committee on nuisances, consisting of three members.

## SANITARY COMMITTEE.

IX. The sanitary committee shall be entrusted, subject to the general superintendence, orders and by-laws of the board, with the exercise and performance of those powers and duties vested by law in the board of health, so far as relates to the prevention and spread of contagious diseases, and likewise with the management of such hospitals for contagious diseases as the board shall at any time order to be opened: *Provided*, That no important addition, alteration, or improvement be undertaken in relation to the same without the sanction of the board.

X. The said committee shall hold stated meetings once every month, and special meetings upon the call of the chairman, or of any two members thereof.

XI. At the first stated meeting subsequent to their appointment, the committee shall elect from among themselves a secretary, who

† NOTE. The secretary shall be eligible to the office of clerk. The same individual may discharge the duties of inspector and sanitary policeman.

shall keep in a book provided for that purpose, fair minutes of all their proceedings.

XII. The committee shall cause every reported case of malignant or contagious diseases existing within the limits of the jurisdiction of the board of health to be visited without delay, and shall be authorized to take such other measures in relation thereto as a majority of the members shall deem proper.

XIII. Whenever a report shall be received at the health office, that a case of any malignant or contagious disease has occurred within the limits of the jurisdiction of the board of health, one of the members of the committee, or, should no member be present, the clerk of the board shall forthwith give notice thereof to the health officer, or to any other physician appointed to inquire into the nature of the case, who shall visit the same, and send to the health office, without delay, a written report in relation thereto. If the report of the physician be such as to require the attention of the committee, the clerk shall notify the members of the same immediately.

XIV. When necessary, the board shall appoint one or more physicians to perform the duties specified in the preceding section, and shall determine the compensation to be paid for the services of the same.

XV. Whenever the board, upon a representation from the sanitary committee, shall determine it to be expedient to provide and hold in readiness one or more hospitals for contagious diseases, temporary or permanent, the committee shall select the location of the same, secure the services of competent nurses, and otherwise put those establishments in condition to be opened with the least delay possible for the reception of patients, while the board shall appoint one or more physicians to attend the sick, shall determine the compensation to be paid to them, as also to the nurses for their services.

XVI. As soon as practicable after the board has determined to provide such hospital or hospitals, the sanitary committee shall arrange and submit to the board for its approbation, a plan of hospital operations, so that everything may be conducted economically and efficiently, from the day the hospital shall be opened.

XVII. All requisitions for medicines and hospital supplies shall be made in writing, upon the chairman of the committee, by the physician in attendance, and for all other articles necessary for the proper management of these hospitals, a requisition in writing shall be made by the steward.

XVIII. No patient shall be admitted into such hospitals, excepting upon an order signed by a member of the board or the health officer. The rate of board to be paid by the patients shall be fixed by the sanitary committee.

**COMMITTEE ON ACCOUNTS.**

XIX. All bills, being first certified as correct by a majority of the committee by whose order the bills were incurred, shall be presented to the board, and by it referred for examination to the Committee on Accounts, previously to an order being passed for their payment.

**COMMITTEE ON OFFICE AND LIBRARY.**

XX. The Committee on Office shall have the charge and general superintendence of the building occupied as the health office, and of the fixtures, furniture, and library belonging thereto, together with the superintendence of all employés. They shall direct to be procured all the necessary supplies for the use of the said office, and for the accommodation of the board at its meetings. They shall have all the officers elected by the board sworn or affirmed to perform faithfully the duties assigned to them, and to keep private all business connected with the office.

**COMMITTEE ON BURIAL GROUNDS AND REGISTRATION.**

XXI. It shall be the duty of the Committee on Burial Grounds and Registration to assist the health officer with their advice in the publication of the bills of mortality, and the annual statement of deaths, and generally to superintend the preparation and publication of the same in detail, weekly.

XXII. The committee shall have charge of the registration department of the office, direct the necessary supplies, see that the clerk carries out the rules and other requisitions of the board, and report to the board any delinquencies of duty that may occur in this department.

XXIII. They shall visit and examine all burial grounds, cemeteries, and vaults within the city, when referred to them by the board as nuisances, and report such action thereon as may be necessary.

**COMMITTEE ON NUISANCES.**

XXIV. It shall be the duty of the Committee on Nuisances to examine all nuisances complained of and referred to them by the board, either directly, or after an examination and report by the inspector, and to report to the board what action may be necessary thereto.

XXV. Whenever the cost of removing a nuisance reported upon by the inspector, or otherwise, shall exceed the sum of . . . . . dollars, the case shall be referred back to the committee, who shall report to this board at the earliest practicable moment the character of said nuisance and the probable cost of removing it; upon which report the board shall take action and instruct the health officer in regard to the same.

**HEALTH OFFICER.**

XXVI. The health officer shall keep a cash book, in which entries

shall be made of the receipts as they occur, and pay over to the board monthly all moneys received by him.

XXVII. He shall furnish the board, at its first meeting in every month, a detailed statement of the receipts of the office during the preceding month.

XXVIII. He shall, whenever any bill is referred to him for collection, enter the same, together with a full description of the claim upon which the said bill is founded, upon a docket kept for that especial purpose, and note opposite to the said entry such action as may be taken, from time to time, in relation thereto.

XXIX. He shall, at the expiration of four months after date of said bills, turn over to the . . . . . for lien, all claims remaining unpaid, and furnish the . . . . . with a transcript of the same.

XXX. He shall, in all business referred to him, and requiring legal proceedings, prosecute the same, but take such proceedings only in conjunction with the . . . . . or his deputy.

XXXI. He shall, whenever this board directs a nuisance to be removed under his supervision, abstain from employing any person who is, or may be, under prosecution for any violation of the health laws. The same prohibition is hereby extended to any other agent of the board to whom such duty may be assigned.

XXXII. He shall award all contracts for abating nuisances within twenty-four (24) hours after the order of the board has been placed in his hands, and shall impose a condition in said contracts that the work must be commenced within forty eight (48) hours after acceptance, and prosecuted continuously to completion.

XXXIII. He shall, from time to time, furnish to the nuisance committee a list of the names of the licensed cleaners, with the number of their licenses, and shall also report to them at any time all information given him or any knowledge he may have obtained respecting defalcations, breaches of faith, or violations of the law or rules on the part of licensed cleaners, or the men in their employ.

XXXIV. He shall keep a book, in which he shall record all cases of contagious or infectious diseases reported to the office, with the date of the report, the location and name of the patient, the disease under which he labors, and the name of the physician in attendance.

XXXV. He shall have the general superintendence of the registration department, and see that the clerk carries out the instructions of the board, and shall report any delinquencies on his part to the Committee on Registration.

XXXVI. He shall publish weekly, over his signature, the returns of deaths as made to the office, in such form and manner as shall be directed by the board; and annually prepare for publication a report of the births, marriages, deaths, and contagious diseases recorded in the office during the year, to be submitted to councils and the mayor through the board of health, in accordance with the registration act.

## THE CLERK.

XXXVII. The salary of the clerk shall be . . . per month. He shall transcribe the minutes taken by the secretary into a book provided for the purpose.

XXXVIII. He shall, also, keep copies of all agreements and letters made or written by order of the board, and of such other documents as the board may direct.

XXXIX. He shall copy, in a book to be provided for the purpose, all resolutions, not of a temporary nature, that may be hereafter passed by the board, with marginal notes.

XL. He shall notify the chairman of all committees of the business referred to them by the board. He shall also notify all elected officers of their election.

XLI. He shall grant licenses to clean privies, under the rules of the board, when so directed, and for each license he shall receive the sum . . . of dollars, and he shall renew the said license from time to time, as the board may direct, upon the payment of the like sum.

XLII. He shall grant orders for the admission of patients into the hospitals (he being first furnished with the usual certificate of a physician) upon satisfactory security being given to him for the payment of the board and medical attendance of the said patients.

XLIII. He shall furnish the health officer a true copy of all resolutions passed by the board concerning the duties of said officer.

XLIV. He shall place in the hands of the health officer for execution all orders to abate nuisances, where the owners or agents have failed to comply with the notice of the board, providing the cost of removing said nuisance shall not exceed the sum of . . . dollars.

XLV. He shall have the entire superintendence of the office, answer all questions appertaining to the business of the board and office, and furnish the office committee with a list of such supplies as may be needed; keep in a book an account of all articles furnished to the health officer and the employés of the office; report to the committee on office any delinquency of duty on the part of those in the employ of the board, preserve good order in the office, and perform such other services appropriate to the position as the board may direct.

XLVI. It shall be his duty to issue permits to clean privy-wells, in accordance with the act of . . . , and the rules of the board relating thereto.

XLVII. He shall refuse permits to cleaners whose licenses have been suspended, or upon whom fines have been imposed for violating the regulations of the board, until said suspension is revoked or fines are paid.

XLVIII. He shall issue permits for the removal of dead bodies from one cemetery to another, or from one grave or vault to another in the same cemetery, within the bounds of the city, quarantine season excepted, unless by special order of the board. In all cases,

before issuing the permit, he shall require a certificate containing the name, age, cause of death, and date of death of the deceased.

XLIX. He shall issue permits for the erection, establishment, and continuance of slaughter-houses, bone-boiling, and fat-rendering and all similar establishments, within or near the limits of this . . . . as provided by the ordinance of this . . . . and the regulations of the State Board of Health.

L. He shall keep a record of all moneys received by him in his official capacity, in a book provided for that purpose, and report the same to the health officer.

LI. He shall, during the absence of the health officer, discharge the duties pertaining to that office.

LII. He shall receive all complaints of nuisances, having the name and residence of the complainant thereto attached, and place them in the hands of the inspector for examination. He shall record the same, when returned by the inspector, in a book kept for the purpose, specifying the date, the location, the character of the nuisance, and the name of the inspector, and make out a duplicate notice of that served upon the owner or agent. He shall submit to the board, at each stated meeting, for confirmation or otherwise, the action of the inspector upon complaints of nuisances, and shall report any neglect of duty upon the part of the inspector in making their examinations and returns. He shall notify committees and witnesses to attend meetings, whenever so directed by the chairman thereof. He shall append to all notices for removing nuisances that part of the law imposing a penalty for neglect or refusal to remove such nuisances.

LIII. He shall have the entire charge of all books and papers belonging to the registration department; he shall see that all entries are accurately made, and the books kept in good order and condition.

LIV. He shall examine carefully the returns of births, marriages, deaths, and contagious diseases, and should any omission or errors occur therein, it shall be his duty to notify the parties making said returns to make the necessary corrections, and any neglect or refusal on their part shall be reported to the board through the committee on registration.

LV. He shall keep, in a book provided for the purpose, a record of the names and residences of physicians, practitioners of midwifery, clergymen, clerks of meetings, clerks of courts, justices of the peace, sextons, undertakers, and others required by law to make returns to the health office; and should any person or persons so required, when notified, neglect or refuse to call at the office and record their names and residences, he shall report the fact to the board, in writing, through the committee on registration.

LVI. He shall fill up all permits for the removal of dead bodies from the city for interment, having first obtained the certificate of the attending physician or the coroner, accompanied by that of the

undertaker, together with the approval of the health officer, whose signature shall in all cases be appended thereto.

LVII. He shall make out and deliver, under the approval of the health officer, all transcripts of births, marriages, deaths, or contagious diseases, applied for from the registration records, with the name of the health officer appended.

LVIII. He shall have charge of the books containing the blanks for birth, marriage, and death certificates, and deliver them, when applied for, to such persons as are required by law to make returns: *Provided always*, That the names and residences of the applicants are on record in the office, or shall be registered at the time of receiving the blanks. He shall also keep an account of all blanks delivered by him, together with the date of delivery and the name and residence of the receiver.

LIX. He shall assist the health officer in the preparation of his weekly statement of deaths and contagious diseases, and of his annual report of births, marriages, deaths, and contagious diseases.

LX. He shall at all times during office hours give to lawyers, physicians, and clergymen, access to the registration books, and allow them to take notes of the contents; and to all other persons desirous of examining into the merits of the system, he shall furnish every necessary facility.

LXI. For all permits to remove dead bodies from the city for interment, and for all certified transcripts from the registration record, there shall be a charge demanded of fifty cents, to be paid over to the health officer.

#### INSPECTOR.

LXII. It shall be the duty of the inspector to have general supervision of street cleaning and garbage collection, and to report to the board any neglect on the part of the contractors in fulfilling the terms of their contracts.

LXIII. He shall see that all special orders of the board relating to street cleaning and collection of garbage are faithfully obeyed, and report to the board any neglect of duty upon the part of the contractors.

#### SANITARY POLICEMAN.

LXIV. It shall be his duty to examine and report upon all complaints of nuisances placed in his hands within twenty-four hours thereafter.

LXV. He shall, whenever any nuisance may be found, immediately serve a notice upon the owner or agent of the premises upon which such nuisances exist, to abate said nuisance. In the event of the owner or agent not being found after diligent search, the notice shall be left upon the premises and the fact reported and entered upon the record.

LXVI. He shall, in making his returns, give an accurate description of the property or properties whereon the nuisance exists, together with the nature, character, or cause of nuisance.

LXVII. He shall strictly follow the schedule of time allowed in service of notices for the abatement of nuisances, when not otherwise specified by resolution of the Board.

LXVIII. He shall, at the expiration of notice (Sundays and days set apart as holidays excepted), reëxamine said nuisance and report what action has been taken in the premises.

LXIX. He shall, with all returns of non-compliance with notice (except in the case of privy wells), present an estimate of the probable expense of removing said nuisance, and also give the offset of all privy wells, taken by accurate measurement.

LXX. He shall serve the bills for removing nuisances upon the owners or agents of the premises on which such nuisances are situated, and if not found after careful inquiry, he shall leave the bills upon the premises.

LXXI. He shall carefully abstain from giving or causing to be given, to any privy cleaner or cleaners, their agents or others, any information respecting nuisances reported to the board, or any complaint whatsoever, or respecting the action of the board relative to a nuisance or nuisances. Such offence shall be considered a misdemeanor in office, and render the inspector so offending liable to immediate dismissal.

LXXII. He shall, whenever complaints are made and verified, of dead animals lying on private property, have them removed by burial or otherwise, under the direction of the health officer, provided the costs of removal of each animal does not exceed the sum of fifty cents.

LXXIII. He shall see that the streets are properly sprinkled with water before being swept or scraped, and that the gutters are properly and thoroughly washed down.

LXXIV. He shall superintend the application of disinfectants to the streets when directed by the board.

LXXV. He shall see that the garbage and ashes are regularly and systematically collected, and that the street dirt, &c., is immediately removed after being collected together; that all garbage and ash carts are properly covered, and that the rules governing the collection and removal of garbage and ashes are rigidly adhered to.

LXXVI. He shall note all cases in which ashes, garbage and waste material of every description is thrown into the streets, and where building material, accumulations of earth, stones, &c., have been left upon the streets in the violation of law, and notify the parties committing the offence.

LXXVII. He shall report all curbing, gutters and streets out of re-



pair, when their condition interferes with the work of street cleaning, also defective drainage and imperfect inlets to sewers.

LXXVIII. He shall notify the contractors of any work in their respective districts that requires attention, or of any neglect on their part, and if, after such notice, the contractors, or any of them, shall not immediately remedy the complaint, he shall report the fact immediately to the board.

LXXIX. He shall perform such other duties connected with the inspection of streets as the board shall from time to time direct.

LXXX. The following schedule of time shall be allowed in service of notice upon parties to abate nuisances, when not otherwise specified by resolution of the board, to wit :

To remove dead animals, slaughter house offal, and other matter in a state of decomposition, and to cleanse and disinfect infected houses, twenty-four (24) hours.

To cleanse overflowing and leaky privy wells and water-closets, to disinfect foul wells, and to cleanse slaughter house manure pits during quarantine season, three (3) days.

To cleanse full privy wells and manure pits, filthy houses, cellars, yards, alleys and vacant lots, to repair and regulate surface drainage, and leaky and defective drain-pipes, five (5) days.

To remove hogs and pens, to cleanse slaughter houses and cow stables, and to fill up or drain ponds of stagnant water, ten (10) days.

#### REMOVING NUISANCES.

LXXXI. Whenever the cost of removing any nuisance (privy wells excepted) shall exceed the sum of . . . dollars, the health officer shall invite proposals, and the bids shall be opened in the presence of the committee on nuisances and awarded to the lowest bidder.

LXXXII. The contractor shall strictly adhere to the stipulations and terms of the contract. No extra allowances will be granted upon bills for work done, or materials furnished, unless specially ordered by the board.

LXXXIII. The contractor shall not proceed in executing his contract if he shall find that the owners have in the meantime commenced operations, or partially abated the nuisance. He shall notify the health officer of the fact, and await further orders.

LXXXIV. The contractor shall strictly conform to the lines and levels furnished by the surveyor appointed by the board, for grading, paving and laying drain pipe.

#### EXPENSE OF REMOVING NUISANCES.

LXXXV. All bills submitted to the board for removing nuisances, not exceeding . . . . dollars, shall be itemized and a charge made for each separate item. A charge shall be made for every incidental expense incurred. The surveyor shall furnish the board with bills as

per measurements for all contracts wherein he is required to give the lines and levels, and make out bills divided proportionately against the properties chargeable with the cost of abating said nuisance. The price to be charged by this board for cleaning privy wells shall be . . . . . per cubic foot for wells measuring less than one hundred cubic feet, and . . . . . cents per cubic foot for wells one hundred cubic feet and over.

LXXXVI. In all cases, until otherwise ordered, where nuisances are directed to be removed forthwith, if the same are not removed within twenty-four hours, the health officer is hereby directed to have the same done at the expense of the owner, &c., &c.

LXXXVII. In all cases of nuisances to be removed by the owners of property, who have been notified to that effect by this board, it shall be understood, that should he or they commence the removing within the time prescribed in the notice, the board will not interfere.

#### MISCELLANEOUS.

LXXXVIII. No communication shall be received by the board from its officers or servants, or from any other person whatever, unless the same be in writing and directed to the board, or through the president or secretary thereof officially.

LXXXIX. When any nuisance is referred to a committee, with power to act thereon, the said committee shall report in writing what action they have taken in relation to it.

XC. Each standing committee shall direct all expenditures that may be necessary to carry out the object of its appointment, provided the same shall not exceed . . . . dollars, and no contract shall be made for any amount over that sum, unless first approved and directed by the board.

XCI. The minutes of all committees shall be read at any meeting of the board, upon the call of a member.

XCII. *Police officers, constables, and watchmen are enjoined, and citizens are respectfully desired, to give information to the board of health of any violation of the health laws, or of the rules and regulations of the board, so that the sanitary measures adopted by the latter to ensure the cleanliness and health of the city may be fully carried out, and all offenders promptly punished.*

#### LICENSED PRIVY CLEANERS.

XCIII. Applications for licenses to clean privy wells, vaults, sinks, or cesspools must state the name of the applicant, his residence and place of business, the names of the sureties proposed to be given on his bond, their occupation and places of residence, the number of air-tight tanks, pumps, trucks, horses, and other appliances to be employed by said applicant, and the accommodations he has for keeping his apparatus when not in use. They must also state that the appli-

cant is the *bona fide* owner of the number of the apparatus, horses, etc., named, and that he is not in collusion or combination with any person or persons to deceive and defraud the board.

XCIV. Upon every such application being referred to the health officer, he shall make the necessary inquiries and examinations and report to the board as early as practicable; and upon his report that the applicant is of good moral character and *bona fide* the owner of the number of apparatus, horses, etc., stated by him, that the tanks or carts are properly and securely constructed, and that the applicant has the necessary accommodations for keeping his apparatus under cover, or from public view when not in use, the board may, if fully satisfied with his bond, and as to the fulfilment of the requirements of the laws and of the rules of the board, direct the clerk to issue a license (or renewal thereof) to him, in conformity to the laws and rules governing the subject; which license shall bear date of the day on which it is ordered to be issued; and every issue of license and renewal thereof shall be reported to the board at the next meeting thereafter.

XCV. Whenever a license or renewal thereof is granted, the health officer shall register in a book the name, residence, and place of business of the party so licensed, the number of his license, the number of tanks, carts, pumps, trucks, horses, etc., to be employed by him, the names, residences, and occupations of his sureties: *Provided, however,* That before any license or renewal thereof is furnished by the clerk, the health officer shall certify to him that each and every tank, truck, or cart has permanently painted on both sides thereof the proper name of the licensed party, and the number of his license plainly and intelligibly displayed, which name and number shall always be kept clean and exposed to public view when the tanks, etc., are in use, and subject to the inspection of any police officer or citizen at all times.

XCVI. The period for the termination of licenses for cleaning privy wells, vaults, sinks, etc., shall be the 15th day of April in each and every year; after which date, however, licenses may be granted upon the full payment of . . . dollars by the applicant, and his compliance with the law and the rules of the board.

XCVII. A permit for emptying or cleaning a privy well, vault, sink, or cesspool shall be issued in the name of the licensed party applying for the same, stating therein the location of the premises, and the name of the owner, agent, or occupant thereof so employing him.

It shall specify the day for the removing of the contents, but may be extended for two days longer, if, in the judgment of the clerk, the work was deferred or postponed in consequence of some unavoidable circumstances. Every permit shall be returned to the health office on the day succeeding its termination; and, if not so returned, the clerk shall have authority to refuse any further permits to the delinquent

cleaner until the rule is complied with, and, if not returned within three days after its termination, he shall report the same to the board, who shall take such action thereon as may be deemed proper.

XCVIII. No privy well, vault, sink, or cesspool shall be cleaned and the contents thereof removed or transported after sunset or before sunrise in any day, unless in an air-tight tank.

XCIX. Every person, persons, or company licensed to clean privy wells, sinks, etc., shall have a pit for depositing the contents of said wells, sinks, etc., (the location to be approved by the board,) and said pit shall not be located within two hundred yards of any public road, lane, or street and shall be screened from public view.

C. It shall be deemed unlawful for any licensed cleaner to make any contract or engagement for the cleaning of a privy well or sink, except with the owner, agent, or occupant of the premises upon or at which the work is to be done; and if at any time it shall be ascertained that a cleaner is violating this rule, the clerk shall refuse him a permit, and the board may revoke his license.

CI. Any violation of law, or of the rules of the board, will, in addition to the punishment imposed by acts of the Legislature, subject the offender to a forfeiture of his license or a suspension thereof, at the option of the board.

CII. Every party licensed shall receive with his license a printed copy of the rules and extracts of laws on the subject, so that he cannot set up the plea of ignorance of their existence.

CIII. Permits shall be submitted for examination at the place where the work is being done, when required by inspectors, police, and other properly qualified officers.

#### HOSPITALS FOR CONTAGIOUS DISEASES.

##### *The Physician in Charge.\**

CIV. The physician in charge shall visit the hospital daily, or oftener, if the circumstances of the patients shall require it.

OV. He shall have entire direction of the medical treatment of the patients and the general direction and management of the hospital, subject to such rules and regulations as the sanitary committee may, from time to time, impose.

CVI. All requisitions for medicines and hospital supplies shall be made by the physician in charge in writing, upon the chairman of the sanitary committee; and for all other articles necessary for the proper conducting of the institution, a requisition in the same manner shall be made by the steward.

CVII. The physician in charge shall have the control of the nurses, and shall promptly report to the sanitary committee any irregularity committed by them, and shall suspend them, if necessary, and report the facts to the sanitary committee for action thereon.

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\* The Health Officer shall be eligible to the position of physician in charge.

OVIII. He shall record, in a book to be provided for the purpose, the name of every patient with the date of admission, age, sex, color, nativity, occupation, disease, and the date of discharge or death, as the case may be, and such other matters as he, or the sanitary committee may consider important or necessary.

CIX. He shall make a weekly report to the sanitary committee or board of health, stating the number of patients admitted since the last report, with the disease, recoveries, deaths, and such other information as he or the sanitary committee may think requisite.

CX. He shall, also, make a monthly report to the sanitary committee or the board of health, which shall contain a summary of the weekly reports and such other matter as he or the sanitary committee may consider requisite.

*The Steward.*

CXI. Before entering upon the performance of his duties, the steward shall enter into a bond with security, to be approved by the board, in the sum of . . . . . dollars, conditioned for the faithful performance of his duties. He shall have no right of property in or to anything at the hospital, and, further, he shall deliver over to his successor in office, or such other person as may be designated by the board, all property, goods, chattels, or produce belonging to or purchased by the board, as the same are or may be confided in his care, in the same condition as they are or may be at such times (reasonable use, wear and tear, fire, or unavoidable injury excepted.)

CXII. The steward shall reside at the hospital and be allowed such apartments in the building as the sanitary committee shall designate.

CXIII. He shall not use or allow to be used, the horses, vehicles, or other property of the board, except for the legitimate purposes of the hospital, or by permission of the sanitary committee.

CXIV. The buildings, grounds, and property of the board at the hospital shall be under the general charge of the steward, subject to such general rules and regulations as the sanitary committee may, from time to time, impose.

CXV. He shall require all persons connected with the hospital to perform such duties as may be assigned them; and, in case of their failure, refusal, or neglect to perform such duties, he shall suspend them from all duty, and report the facts to the sanitary committee for action thereon.

CXVI. He shall require that the hospital shall at all times be kept scrupulously clean; that the clothing and bedding of patients shall be frequently changed, and thorough ventilation maintained; and to accomplish these ends he shall have authority, subject to the approval of the physician in charge, to prescribe the duties of all nurses and attendants, and indicate the time and manner in which such duties shall be performed.

CXVII. He shall take charge of and inventory the effects of all patients that may be admitted into the hospital and return them, after having been disinfected, to the owner when discharged; or, in the event of the decease of the patient, a report of such effects shall be made to the sanitary committee.

CXVIII. He shall superintend the work of disinfecting clothing, beds, bedding, etc., and see that it is efficiently done, and must enforce the rule that every patient, immediately before leaving the hospital, must take a bath and be supplied with non-infected clothing.

CXIX. The steward shall make an inventory, in a book provided for the purpose, of all articles sent to the hospital for purification, in which shall be noted the premises from which removed, the condition in which received, the disposition made of them when received, and when returned. All such articles must be purified as soon as possible after being received at the hospital.

CXX. Great discretion and judgment must be exercised by the physician in charge and the steward in permitting persons to visit the hospital, and in no case shall visits to the wards be allowed unless under circumstances of a very special nature.

CXXI. The steward shall have authority to select such individuals as he may think proper to take charge of the various departments (bakery, laundry, etc.,) and shall report such action to the Sanitary Committee.

CXXII. He shall invariably treat the patients with kindness and civility, and never suffer any degree of cruelty, insolence, neglect, or unkindness on the part of the nurses or servants toward them to pass unnoticed. He shall also see that the nurses and attendants treat the sick with care and humanity, that the diet directed by the physician in charge is properly prepared and supplied, and generally that the orders of the physician in relation to the treatment of the sick and the management of the wards and departments more especially under his charge are fully and regularly exercised.

CXXIII. He shall, in no instance, permit intoxicating liquors or any provisions to be given to the patients, except by direction of the physician in charge.

CXXIV. He shall see that all fires and lights are extinguished in every apartment of the premises under his control before ten o'clock at night, except such as may be absolutely necessary, and these he shall leave under proper care.

CXXV. Whenever a patient dies in the hospital, the steward shall have his or her body decently interred in the burial ground appointed by the board of health; see that such of his or her clothing as require it are, within twenty-four hours after the decease of the patient, properly washed, disinfected, ironed and put away or destroyed when so directed by the physician.

CXXVI. So soon as a patient is discharged from or dies at the hos-

pital, the steward shall make out and transmit forthwith to the board a bill for his or her board and attendance, at the rate of . . . . . for each day the said patient has remained at the hospital, counting the days of entrance and departure each one day, and in the case of his or her death an additional sum of . . . . . dollars for burial expenses. He shall also be required to make a similar record of patients who are unable to pay their board and transmit a copy to the board at the end of each quarter.

CXXVII. He shall see that the nurses and other employés are suitably provided for with board, lodging and washing.

CXXVIII. He shall be required to communicate, in writing, to the board or sanitary committee, whatever alterations, improvements, or observations he may consider will have a tendency to promote the interests of the board, preserve the grounds and the property at the hospital, or increase the comforts of those under his care.

CXXIX. On the first of May, annually, if the hospital is a permanent one, the steward shall take an inventory of all the household goods and other property belonging to the hospital, and shall record said inventory in a book specially provided for the purpose, and shall present a copy of the same to the sanitary committee.

CXXX. He shall make out and transmit to the sanitary committee, at the close of each month, the pay-roll of all nurses and attendants employed at the hospital.

CXXXI. No patient shall be employed in the work of the house without the consent of the sanitary committee.

#### *The Matron.*

CXXXII. The matron shall take care that each patient has the diet prescribed, superintend its preparation, and have it served at regular stated hours.

CXXXIII. She shall have charge of the bedding, bed clothing, and such wearing apparel as may be provided for the patients; shall have general supervision of the laundry, and shall see that cleanliness is maintained throughout the hospital.

CXXXIV. She shall have charge of the table for the steward and other officers, and for the employés of the hospital, and in conjunction with the steward, shall have control of the servants and nurses.

#### REGULATIONS TO BE OBSERVED IN REMOVING KITCHEN GARBAGE AND OFFAL.

CXXXV. No person shall engage in the business of collecting and transporting kitchen garbage and offal in the . . . . . of . . . . . (except the persons acting under the direction of the board of health) without having obtained a permit from the health office, authorizing such person to engage in the business, in conformity with the rules and regulations of the said Board of Health.

CXXXVI. All carts and other vehicles for removing kitchen garbage and offal shall be so constructed as to be water-tight, and securely covered on the top. They shall have permanently painted, in white letters, upon both sides thereof, the proper name of the contractor, and the number of his district, which name and number shall be plainly and intelligibly displayed, and always kept clean and exposed to public view when the carts are in use, and at all times subject to the inspection of any police officer or citizen. All such carts and vehicles shall always be kept clean, and shall be so loaded and driven that none of their contents shall fall or spill therefrom.

CXXXVII. Owners, tenants, and occupants of houses shall provide suitable receptacles (not larger than a half-barrel) for holding kitchen garbage and offal, and shall deliver the same promptly when called for by the properly authorized persons. No boxes, buckets, or other receptacles used for the purpose aforesaid shall be placed upon any sidewalk or in any public place whatever.

CXXXVIII. Contractors shall call regularly at all dwellings, and all other buildings, whether the means of access be through alleys, courts, or from streets or public highways, and remove promptly, and in as cleanly a manner as possible, all kitchen garbage and offal that may be offered, and return the receptacles to the houses or yards from which received. They shall also collect and remove all garbage and offal which by accident or otherwise may have been put upon the sidewalks, courts or alleys, by residents, occupants, or persons having charge of dwellings and all other buildings.

CXXXIX. The carts or vehicles shall be sent at a regular hour through every street, lane or highway, and adequate notice shall be given, by the ringing of a bell, to the occupants of all buildings they are about to approach for the removal of kitchen garbage and offal.

CXL. No person engaged in collecting and in transporting kitchen garbage and offal shall do, or permit to be done, anything in connection therewith that shall be needlessly offensive or filthy in relation to any person, place, building, premises or highway.

CXLI. No deposit of kitchen garbage shall be made within the built-up portions of the . . . of . . . , or upon any lot or open space lying within any portions thereof, or upon any wharf, or upon any boat or vessel lying at any wharf, except by a special permit from the board of health.

CXLII. Garbage and offal shall not be kept in the same vessel, nor removed in the same cart or vehicle, with ashes and rubbish. It shall be removed *daily*, from the 1st of June to the 1st of November, and not less than *three times a week* in the remaining months in each year.



## RULES OF ORDER.

CXLIII. The order of business shall be as follows :

1. A quorum (*i. e.*, *four members*) being present, the president shall take the chair and call the board to order.
2. The minutes of the last meeting shall be read, and, if necessary, corrected and adopted.
3. Communications may be presented and disposed of.
4. Reports of committees may be made and considered.
5. Resolutions may be offered and discussed.

CXLIV. When a member is about to speak in debate, or to communicate any matter to the board, he shall rise and respectfully address himself to "Mr. President," confining his remarks to the subject before the board.

CXLV. Those members desiring to be heard upon any motion or resolution before the board shall not be allowed to speak more than five minutes on any one subject; nor shall they speak oftener than twice on any motion or resolution.

CXLVI. The president shall not speak on any question before the board while in the chair; should he desire to engage in debate, he must call another member to the chair.

CXLVII. If any member in debate transgresses the rules of the board, the president shall, or any member may, through the president, call him to order; the member so called shall immediately sit down, unless permitted to explain.

CXLVIII. On questions of order, there shall be no debate, except on an appeal from the decision of the president, sustained by two members.

CXLIX. No member, when speaking, shall be interrupted unless by a call to order, or by a member to explain, or by a motion for the previous question.

CL. No member of the board shall leave his seat during the session of the board, unless by permission of the chair, and no member shall leave the room whilst another is on the floor.

CLI. Every motion, made and seconded, shall be distinctly announced from the chair before any debate on it can take place, and, when the discussion is closed, the president shall put the question in the following form : "As many as are in favor of the motion, say aye;" and, after the affirmative is expressed, he shall reverse the question thus : "As many as are of the contrary opinion, say no." But the president, or any member, may call for a division of the board, when the president shall again put the question, distinctly, in the following manner : "As many as are in the affirmative will rise;" and when he has announced the number in the affirmative, he shall put the opposite side of the question : "As many as are in the negative will rise." Two members may require the yeas and nays on any ques-

tion, and have them entered on the minutes ; but the president shall always vote last.

CLII. A motion shall be committed to writing, at the request of any member.

CLIII. A motion may be withdrawn by the mover and seconder before amendment or decision, and, if withdrawn, the proceedings had thereon shall not appear on the minutes.

CLIV. A member may call for a division of the question, if it comprehends distinct questions.

CLV. No business regularly before the board shall be interrupted, except by motion for adjournment, for the previous question, viz : "Shall the main question be now put?" and which shall be decided without debate, or for postponement, for commitment, or for amendment.

CLVI. A motion for the previous question must be sustained by, at least three members, and shall be decided without debate.

CLVII. A motion for postponement shall preclude commitment ; that for commitment shall preclude amendment or decision on the original subject.

CLVIII. No motion for reconsideration shall be received, unless made and seconded by members who voted in the majority, nor unless offered within two stated meetings of the one at which at the decision was had on the original question.

CLIX. When a blank is to be filled, the question shall be taken on the largest sum, greatest number, and remotest day.

CLX. Corrections to the minutes may be moved by any member at the ensuing meeting, provided it shall be shown that the said corrections are required in order to render the minutes an accurate detail of the business transacted at the meeting.

CLXI. When cases occur not provided for in the above rules, the practice and rules laid down in Robert's Manual shall govern.

CLXII. No rule shall be suspended, or altered, except by a vote of two-thirds of the members present, unless the same shall have been proposed at a previous stated meeting.

## APPENDIX O.

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### ANNUAL REPORTS AND MORTUARY TABLES OF CITIES.

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1. Annual report of the health officer of Erie for 1885.
  2. Extracts from the annual reports of the health officer of Philadelphia for the year 1886.
  3. Tables of causes of death in the city of Philadelphia for the year 1886.
  4. Extracts from the annual report of the Board of Health of the City of Altoona for the year 1886.
  5. Extracts from the annual report of the Department of Health of Pittsburgh for the year 1886.
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#### I. ANNUAL REPORT OF THE HEALTH OFFICER OF THE CITY OF ERIE FOR THE YEAR 1885.

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Total of deaths, 456. Sex: males, 241; females, 215; under five years of age, 187.

Nationalities—Born in Erie, 252; other parts of the United States, 68; Germany, 84; Ireland, 32; England, 10; Canada, 7; Scotland, 2; Italy, 1.

Monthly deaths in 1885—January, 28; February, 21; March, 53; April, 53; May, 48; June, 21; July, 43; August, 66; September, 30; October, 32; November, 30; December, 31.

Ages of persons who died in 1885—Under 1 year, 141; 1 to 2 years, 28; 2 to 5 years, 19; 5 to 10 years, 10; 10 to 20 years, 18; 20 to 30 years, 47; 30 to 40 years, 27; 40 to 50 years, 37; 50 to 60 years, 35; 60 to 70 years, 42; 70 to 80 years, 35; 80 to 90 years, 12; 90 to 100 years, 5.

Population of Erie, according to the census taken in 1880, 27,730; estimated population according to the city directory of 1885, 36,008. Annual death per thousand of population, 13.2.

Mortality in former years—Deaths in 1876, 345; in 1877, 347; in 1878, 375; in 1879, 405; in 1880, 490; in 1881, 549; in 1882, 499; in 1883, 440; in 1884, 496; in 1885, 456.

During a period of ten years 4,407 persons died in the city limits of Erie. A great many corpses were sent away, and others brought here for interment.

## REMARKS.

According to the above report we had during last year, notwithstanding the increase of the population, 40 less deaths than in the previous year, and 93 less than in the year 1881. In regard to the place of birth, 252 were born in Erie, and 68 in other parts of the United States. Among the other six different nations, Germany stands with 84, Ireland with 32, and Italy with 1.

There was a large difference in the mortality of the six wards. The Second ward has 107 deaths, the Sixth 88, and the First 83. In the last two named wards our hospitals and asylums for children are located, and many patients and orphans are kept there who don't belong to the ward. Some are brought there after accidents, and help to swell the death rate of the district.

The biggest mortality we had in the month of August—66 cases, mostly children, victims of the cholera infantum. March and April had 53 each—many with pneumonia and consumption; and in February and June only 21 died. Notwithstanding the great difference in the temperature in April 11 died with pneumonia, in May 9, and in July 7, from 45 during the whole year. From the 75 consumptive people, 12 died in March, 8 in April, May and June, 10 in August and 9 in December. January furnished only 2, February 4 and November 3 cases, which is rather interesting for patients who intend to go away for a change of climate. The so-called summer complaint, or cholera infantum, killed 41 during the hot season. Ninety-six died with typhoid, malarial, intermittent and scarlet fever, diphtheria, croup, whooping-cough and other so-called "zymotic" diseases, produced by a germ, specific poison, bacillus or ferment which grows the best on damp filthy places in a foul atmosphere. Badly ventilated dwellings, foul cellars with drainage, shallow wells with over-filled vaults only a few feet off, piles of decaying garbage in the yard and alleys, ponds of stagnant water, accumulations of all kinds of filth, in short every thing which poisons the air we breathe and pollutes the water will propagate zymotic diseases. This is no longer a theory advanced by a single medical man; it is a stubborn fact proven by the acknowledged leaders of the scientific world. Many of the zymotic diseases are caused by living organisms or little germs which multiply immensely, and are only visible under the most powerful microscopes; but they are there and will do immense mischief if not destroyed at the start. In former times they called zymotics "visitations." To-day we call it carelessness, negligence and ignorance of sanitary laws, and we make the people use disinfectants and apply superheated steam and fire to destroy the germs. By the excrements of one typhoid fever patient the drinking water of the whole city of Plymouth was poisoned and created great misery. If the dam forming the first reservoir had been removed at the first appearance of the

fever epidemic many lives could have been saved, but the water company would not take the advice, and the mortality was simply fearful. Every public water supply should be perfectly pure, and guarded like the public treasury. There is life and death to the inhabitants in the public reservoir, and if the water is polluted it is worse than if a bank is bursted, the loss is irreparable, while the money simply goes to Chicago or some other place and only changes hands.

#### NO SMALL-POX.

Since October, 1882, we had no single case of small-pox in the city. During the last fall, when the disease was raging in Canada, a quarantine of the Canadian ships was established by the United States Government, and none of the crew allowed to go on shore without recent vaccination. The city authorities wisely ordered a free wholesale vaccination, and on over three thousand persons the operation was performed, and the very best virus was procured for that purpose. The expenses were very small in proportion to the work done. In regard to the placing of the pest-house unfortunately a good deal of bad feeling was created, and we have no fixed place yet. Fortunately we had no small-pox cases so far, and if the disease should break out in a private house, we are perfectly able to purify and disinfect it in such a manner that it might be occupied in a week afterwards. For homeless tramps we will find an empty dwelling somewhere, and see that the unfortunates won't freeze to death and will get their regular nursing in the last quarter of the nineteenth century. Our State laws provide for the maintenance of such people. In the meantime we have to vaccinate the people, as it is better to have a mild form of the disease than the old-fashioned small-pox with all its horrors.

Lately a cry went through the papers about counterfeit impure vaccine matter sold in large cities. I simply say there is no danger for us from that direction. We have in our State the finest vaccine farm of blooded stock in the world, and I visited the same myself and was surprised to see the splendid heifers they use for raising the vaccine virus, and was delighted to see how clean the animals and everything around the institution were kept. From one heifer they will prepare without much trouble and without injuring the animal some two thousand vaccine points, which are sold at \$6 to \$8 a hundred. What is the use then to counterfeit the vaccine matter in our own country, where we have plenty of tame cattle? They may do it on the plains, where you have to catch the cattle with a lasso. If people want to get vaccinated let them have it done, and don't say: "Perhaps the vaccine is not first-class and is counterfeited."

From twelve persons who died with small-pox in 1882, nine were never vaccinated, and on the remaining three I discovered only very small marks. Every one of them I examined before the coffin was closed, and this is why I here pay particular attention to this matter.

### HOW DISEASE IS PROPAGATED.

Many diseases are spread by the shipment of dirty old rags from other places, and I think all that stuff ought to be washed and disinfected before it is given to the poor girls and boys who have to assort it, and their shops ought to be fumigated with plenty of sulphur every day or not tolerated in the heart of a city if the proprietors refuse to spend a few dollars to protect the health of the citizens. It is no use to make extra laws for such things; we want the moral support of an intelligent public.

There is still plenty of room for the improvement of the sewerage of this city, and the west side of State street, south of the hay market, has no regular sewer, and is a disgrace to that part of the city. A few other less frequented streets are in the same condition.

During the year many private nuisances around houses, barns, empty lots and alleys were removed and the owners of such places notified personally and by printed notices to do it. There is a remarkable improvement in this direction over former years, but there are still a few people who think they have a right to use the alleys as dumping places for manure and all kinds of filth and rubbish. Many people are living in the business part of the city who hardly know what to do with the garbage and offal, and the few swill boys who take the stuff are complained of as a nuisance also. A good portion of rubbish could be burned in the common stoves; the balance ought to be removed to a proper place in a regular garbage wagon, as in other cities. In some places they cremate in furnaces all the rubbish and street sweepings instead of polluting the river with them. Our gas wells could furnish cheap fuel for that.

Before our county fair some twenty cows died near the fair ground and in Marvintown with the so-called Texas cattle fever, brought here by some Cherokee cattle from the Indian Territory. In order to prevent further mischief the people were notified by the public press of the existence of the disease, and the native cattle were kept away from the infected fair ground. The carcasses of the dead cattle were removed at once to the fertilizing works, and a law passed to prohibit the unloading of Texas cattle during the hot season. This energetic measure interfered with the holding of the fair, but saved our milk cows from the extremely dangerous disease.

### THE CITY MARKET.

Our public market is improving every year. The meat offered for sale is very good in comparison with other places of the size. Some counterfeit butter dealers were driven from the market, and some person who sold poisonous cheese was traced out in the country and had to settle up. In making the cheese some old copper pan was

used containing verdigris, which shows that much attention should be paid while preparing articles of food.

Lately I discovered some pork containing the deadly parasite, the trichina spiralis, a small worm which permeates the stomach and infests the muscles of man, and kills the victim if the pork is eaten in a raw state or is only half cooked. As it is almost impossible to examine with the microscope all the pork eaten in the city I would advise the people to cook the pork thoroughly cut up in small pieces, and to stop that cannibal fashion of eating raw sausage meat. If a man escapes the trichinosis, he may catch a tape worm from raw meat. The first case of trichinosis I found here in 1875. The disease has since appeared in many other places, and I think it is better to make the people acquainted with the facts. It is not advisable to pass an ordinance against the infected pork. The greatest law-giver of the world, Moses, forbade the use of it, but that law got repealed long ago. All we have to do is to elevate the people, and they will take care of themselves.

During the summer months the city pound master rendered me valuable assistance in removing nuisances and serving notices.

#### A BIRTH REGISTER.

The law now requires a license for marriages, and I think, to make the vital statistics complete, the necessary steps ought to be taken to register all the births in the city. For this purpose it requires a book and the necessary blanks. This registry ought to be free of expense. Many a poor laborer whose family is increasing needs the fifty cents for other purposes than to pay an officer for writing a couple of words in the big book. We never charged anything for a funeral permit; let the other come in free also. Couples who are getting married could better afford to pay a small fee.

#### BOARDS OF HEALTH.

The appearance of the cholera in Europe, the fever epidemic in Plymouth, the small-pox plague in Canada have aroused the people in this country, and have interested them in the work of the sanitarians, who have acted since as the pioneers to protect the health of their fellow-beings already in thirty States of the Union. State boards of health were established, and on the 3d of June of last year Pennsylvania joined the ranks. We have attended, with the permission of his honor the mayor, and without any further expense to the city, the conference of the State Board of Health and the meeting of the American Public Health Association, where plans were devised to check the probable advance of the small-pox, cholera, diphtheria, yellow fever and other contagious diseases, and we hope every community will assist in the good work.

Since I am in the city's service I furnish my own office, fuel, light,

microscope, lactometer, etc. Only the big death book belongs to the city. Our ambulance has gone to pieces, and the pest-house on Garrison Hill has to get out of the neighborhood of the new soldiers' home. In case of an emergency we will have to depend on the good will of our city government as on former occasions, and on the moral support of the citizens and the public press and hope to get along. Times are pretty hard and it is wrong to ask for too much at once, but we want a book and blanks for the births and deaths as soon as possible.

Respectfully,

E. W. GERMER,  
*Health Officer.*

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## II. CITY OF PHILADELPHIA.

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Extracts from Health Officer's Annual Report of Births, Marriages and Deaths for the year 1886.

REGISTRATION DEPARTMENT,  
HEALTH OFFICE, PHILADELPHIA, *January, 1887.*

*To the President and Members of the Board of Health :*

GENTLEMEN: In accordance with the act of Assembly approved March 8, 1860, the following abstract of births, marriages and deaths is respectfully presented through you to the city councils for the year ending December 31, 1886.

The number of births registered during the year amounted to twenty-three thousand two hundred and twenty-one (23,221), an increase over the previous year of five hundred and sixty-five (565). The number of marriages were six thousand two hundred and fifteen (6,215), a decrease from the previous year of one thousand four hundred and sixty-one (1,461). The deaths amounted to twenty thousand and five (20,005), a decrease of one thousand three hundred and eighty-seven (1,387).

The following table shows the ratio of deaths, with population, for the past twenty-six years :



YEARS.	Population.	Deaths.	Deaths to 1,000 persons living.	Persons living to one death.
1861, . . . . .	576,408	13,540	23.49	42.57
1862, . . . . .	587,287	13,864	23.60	42.36
1863, . . . . .	596,166	14,220	23.73	42.06
1864, . . . . .	608,045	15,875	26.10	38.30
1865, . . . . .	618,924	15,633	25.25	39.59
1866, . . . . .	620,803	15,362	23.80	40.99
1867, . . . . .	640,682	12,660	19.76	50.60
1868, . . . . .	651,561	13,391	20.39	48.65
1869, . . . . .	662,440	13,428	20.27	49.33
1870, . . . . .	*674,022	15,317	22.72	44.00
1871, . . . . .	700,000	15,485	22.12	45.20
1872, . . . . .	725,000	18,987	26.19	38.18
1873, . . . . .	750,000	15,224	20.29	49.26
1874, . . . . .	775,000	15,238	19.66	50.86
1875, . . . . .	800,000	17,805	22.25	44.93
1876, . . . . .	825,594	18,892	22.88	43.69
1877, . . . . .	850,856	16,004	18.81	53.16
1878, . . . . .	876,118	15,743	17.97	55.65
1879, . . . . .	901,380	15,473	17.17	58.25
1880, . . . . .	*846,960	17,711	20.91	47.82
1881, . . . . .	868,000	19,515	22.48	44.47
1882, . . . . .	886,539	20,059	22.62	44.19
1883, . . . . .	907,041	20,076	22.13	45.18
1884, . . . . .	927,995	19,999	21.55	46.40
1885, . . . . .	949,432	21,393	22.53	44.38
1886, . . . . .	971,863	20,005	20.59	48.55

\* U. S. Census—the intervening years' population estimated.

The following comparative table will show the mean temperature of the summer months for the past eleven years:

MONTHS.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
June, . . . . .	Deg. 42.2	Deg. 71.7	Deg. 67.4	Deg. 71.7	Deg. 73.8	Deg. 67.1	Deg. 72.9	Deg. 73.7	Deg. 70.5	Deg. 70.6	Deg. 68.6
July, . . . . .	78.6	77.8	77.3	75.6	76.6	77.5	77.4	76.1	71.8	77.2	74.6
August, . . . .	74.3	76.5	73.4	72.7	72.8	75.0	73.9	71.9	72.5	71.8	73.2
September, . .	63.8	68.8	67.9	64.4	67.7	74.8	69.1	64.5	70.6	65.2	69.2
Mean, . . . . .	72.52	72.95	71.62	71.10	72.47	73.10	73.32	71.5	71.3	71.2	71.4

The number of deaths from diphtheria amounted to four hundred and eleven (411), a decrease from the previous year of one hundred and eighty-nine (189); the deaths from scarlet fever amounted to two hundred and forty-eight (248), a decrease from the previous year of one hundred and twenty-seven (127).

	Diphtheria.	Scarlet fever.
First quarter, . . . . .	186	85
Second quarter, . . . . .	84	87
Third quarter, . . . . .	91	34
Fourth quarter, . . . . .	100	42
Total, . . . . .	411	248

The following comparative table shows the number of deaths from each disease for the past nineteen years :

YEARS.	Diphtheria.	Scarlet fever.
1868, . . . . .	119	224
1869, . . . . .	182	799
1870, . . . . .	172	956
1871, . . . . .	145	262
1872, . . . . .	150	174
1873, . . . . .	110	319
1874, . . . . .	179	461
1875, . . . . .	662	1,032
1876, . . . . .	708	328
1877, . . . . .	458	379
1878, . . . . .	464	554
1879, . . . . .	321	336
1880, . . . . .	323	291
1881, . . . . .	457	486
1882, . . . . .	933	310
1883, . . . . .	1,006	561
1884, . . . . .	680	510
1885, . . . . .	600	375
1886, . . . . .	411	248

### BIRTHS.

The number of births registered during the year was twenty-three thousand two hundred and twenty-one (23,221), an increase over the previous year of five hundred and sixty-five (565), or 2.49 per cent.

The number of male births was twelve thousand one hundred and five (12,105), an increase over the previous year of two hundred and eighty-nine (239); the female births numbered eleven thousand one hundred and sixteen (11,116), an increase over the previous year of two hundred and seventy-six (276).

The following table will show the number of births in each month, the number of colored births, also the still-births, twins and triplets :

TABLE I.—BIRTHS.

1886.	Total.	BIRTHS.		BLACK.		STILL-BORN.		Twins.	Triplets.
		M.	F.	M.	F.	M.	F.		
January, . . . . .	2,005	1,046	959	30	27	41	40	19	..
February, . . . . .	1,964	1,018	946	34	30	45	35	14	..
March, . . . . .	2,104	1,121	983	35	23	52	50	17	..
April, . . . . .	1,794	910	884	23	25	43	29	22	..
May, . . . . .	1,730	936	794	21	20	50	41	31	..
June, . . . . .	1,793	920	873	23	19	33	36	13	..
July, . . . . .	2,111	1,224	987	16	17	38	27	22	..
August, . . . . .	2,059	1,065	994	33	20	48	42	23	..
September, . . . . .	2,003	1,070	933	33	22	43	31	24	..
October, . . . . .	2,081	1,071	1,010	24	28	40	40	20	1
November, . . . . .	1,834	918	916	15	19	40	31	19	..
December, . . . . .	1,743	906	837	21	12	46	44	5	..
Total, . . . . .	23,221	12,106	11,116	308	262	520	446	229	1

The number of births in each quarter of the year was as follows:

First quarter, ending March 31, . . . . .	6,073
Second quarter, ending June 30, . . . . .	5,317
Third quarter, ending September 30, . . . . .	6,173
Fourth quarter, ending December 31, . . . . .	5,658

23,221

The following table presents the births in each ward during the year 1886:

TABLE II.—Births in each Ward, 1886.

First, . . . . .	1,380	Thirteenth, . . . . .	395	Twenty-fourth, . . . . .	1,219
Second, . . . . .	789	Fourteenth, . . . . .	494	Twenty-fifth, . . . . .	1,344
Third, . . . . .	391	Fifteenth, . . . . .	1,241	Twenty-sixth, . . . . .	1,224
Fourth, . . . . .	725	Sixteenth, . . . . .	563	Twenty-seventh, . . . . .	634
Fifth, . . . . .	427	Seventeenth, . . . . .	567	Twenty-eighth, . . . . .	1,194
Sixth, . . . . .	259	Eighteenth, . . . . .	701	Twenty-ninth, . . . . .	1,233
Seventh, . . . . .	599	Nineteenth, . . . . .	1,580	Thirtieth, . . . . .	585
Eighth, . . . . .	258	Twentieth, . . . . .	1,067	Thirty-first, . . . . .	824
Ninth, . . . . .	161	Twenty-first, . . . . .	549	Unknown, . . . . .	234
Tenth, . . . . .	448	Twenty-second, . . . . .	655		
Eleventh, . . . . .	407	Twenty-third, . . . . .	571	Total, . . . . .	23,221
Twelfth, . . . . .	413				

The largest number of births occurred in the Nineteenth ward—one thousand five hundred and eighty (1,580); and the lowest in the Ninth ward—one hundred and sixty-one (161).

#### MARRIAGES.

The number of marriages registered during the year 1886 amounted to six thousand two hundred and fifteen (6,215), a decrease from the previous year from one thousand four hundred and sixty-one (1,461).

First quarter, ending March 31, . . . . .	1,479
Second quarter, ending June 30, . . . . .	1,575
Third quarter, ending September 30, . . . . .	1,405
Fourth quarter, ending December 31, . . . . .	1,756

6,215

TABLE III.—MARRIAGES. *Nativities of the Parties.*

NATIVITIES.	BIRTHPLACE OF BRIDES.			Total of grooms.
	United States.	Foreign.	Not given.	
Birthplace of grooms:				
United States, . . . . .	3,204	429	26	3,659
Foreign, . . . . .	620	1,548	10	2,178
Unknown, . . . . .	45	8	325	378
Total of brides, . . . . .	3,869	1,985	361	6,215

The number of marriages in which both parties were natives of the United States was three thousand two hundred and four (3,204), and the number of marriages in which both parties were of foreign birth was one thousand five hundred and forty-eight (1,548), and the number of marriages in which the nativities of both parties was unknown was three hundred and twenty-five (325).

The number of men married, natives of the United States, three thousand six hundred and fifty-nine (3,659), and the number of women three thousand eight hundred and sixty-nine (3,869); the nativities of three hundred and seventy-eight (378) men and three hundred and sixty-one (361) women have been omitted.

The number of men of foreign birth married amounted to two thousand one hundred and seventy-eight (2,178), of whom six hundred and twenty (620) married women of the United States, and one thousand five hundred and forty-eight (1,548) married women of foreign birth.

The following table will show the ages of the parties married during the year 1886:

TABLE IV.—MARRIAGES. *Age of the Parties.*

1886.	AGES OF THE WOMEN.								Total of men.
	Under 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	
Ages of the Men:									
Under 20, . . . . .	9	7	2	15	1	12	11	4	18
20 to 25, . . . . .	337	1,312	200	96	4	11	11	12	1,877
25 to 30, . . . . .	175	1,213	696	335	19	7	8	1	2,195
30 to 40, . . . . .	48	307	538	133	66	12	4	1	1,258
40 to 50, . . . . .	2	33	67	30	49	11	8	1	312
50 to 60, . . . . .	4	12	1	5	11	12	4	1	112
60 to 70, . . . . .	1	1	2	1	1	1	1	1	36
70 to 80, . . . . .	1	1	2	1	1	1	1	1	4
80 to 90, . . . . .	1	1	1	1	1	1	1	1	1
Not given, . . . . .	1	11	2	1	1	1	1	1	403
Total of women, . . .	572	2,888	1,518	617	149	31	12	1	6,215

The number of men married under the age of twenty was eighteen (18), while the women of same age amounted to five hundred and seventy-two (572); the number of men married between the age of twenty and twenty-five amounted to one thousand eight hundred and seventy-seven (1,877), and the number of women between the same age was two thousand eight hundred and eighty-eight (2,888); the number of men married between twenty-five and thirty was one thousand five hundred and eighteen (1,518), while the women of the same age was two thousand one hundred and ninety-five (2,195); the number of men married between thirty and fifty amounted to one thousand five hundred and seventy (1,580); one hundred and forty-eight (148) men were married between fifty and seventy; and four (4) married over the age of seventy; twelve (12) women were married between sixty and seventy.

## MORTALITY.

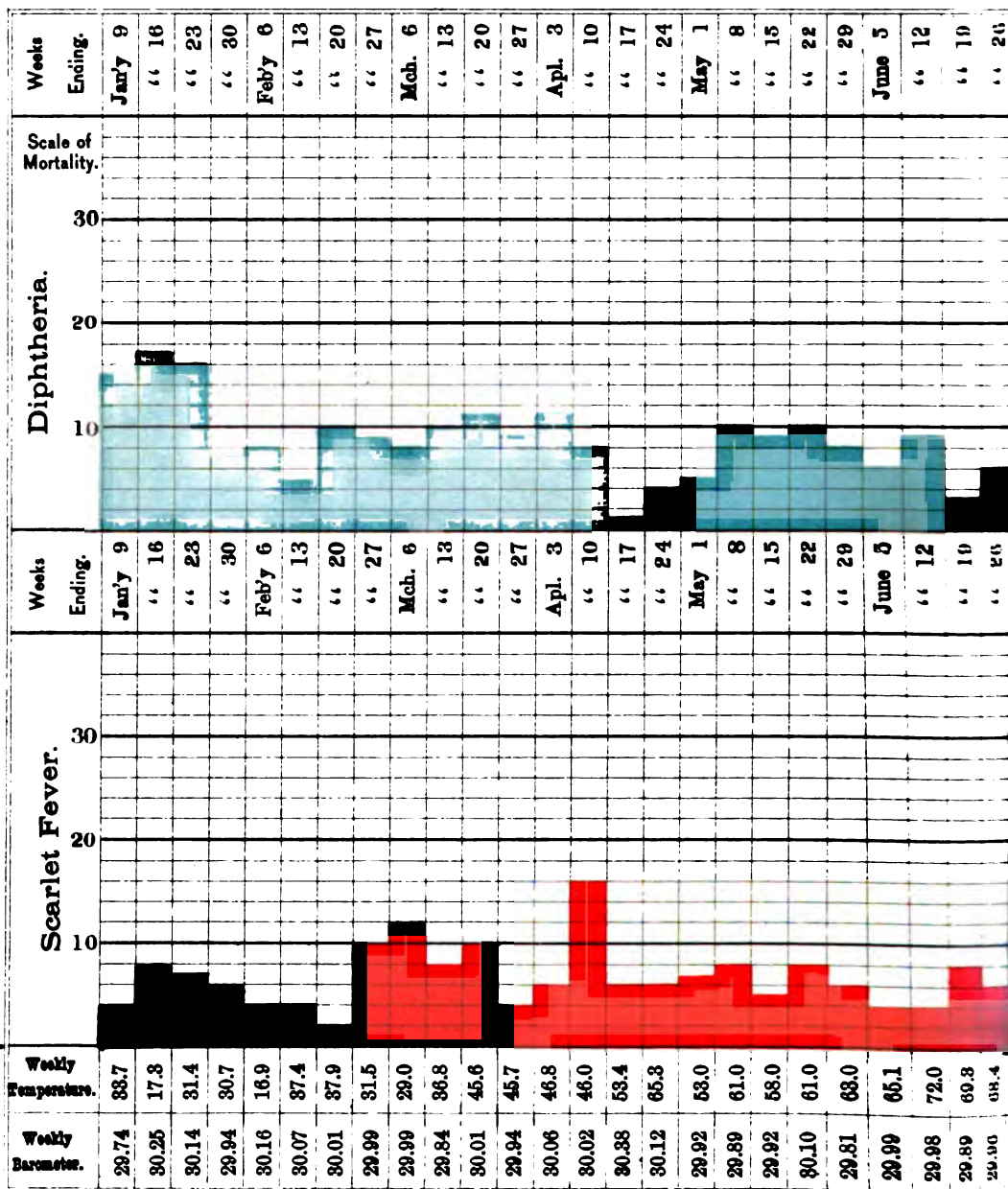
The number of deaths during the year 1886,		20,005
White . . . . .	18,949	
Colored . . . . .	1,056	
Total . . . . .		20,005
Males . . . . .	10,160	
Females . . . . .	9,845	
Total . . . . .		20,005
Males adults . . . . .	5,503	
Females adults . . . . .	5,510	
Total . . . . .		11,013
Male children . . . . .	4,657	
Female children . . . . .	4,335	
Total . . . . .		8,992
Actual deaths in the city . . . . .		20,005
Deaths from specific diseases . . . . .	18,808	
"    "    old age . . . . .	753	
"    "    violence (accident), homicide, suicide . . . . .	439	
"    "    unknown causes . . . . .	5	
Total . . . . .		20,005

In the above figures the still-born and premature births and bodies brought to the city are not included, thus showing the actual mortality.



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## Exhibiting the Course of the Mortality from Diphth

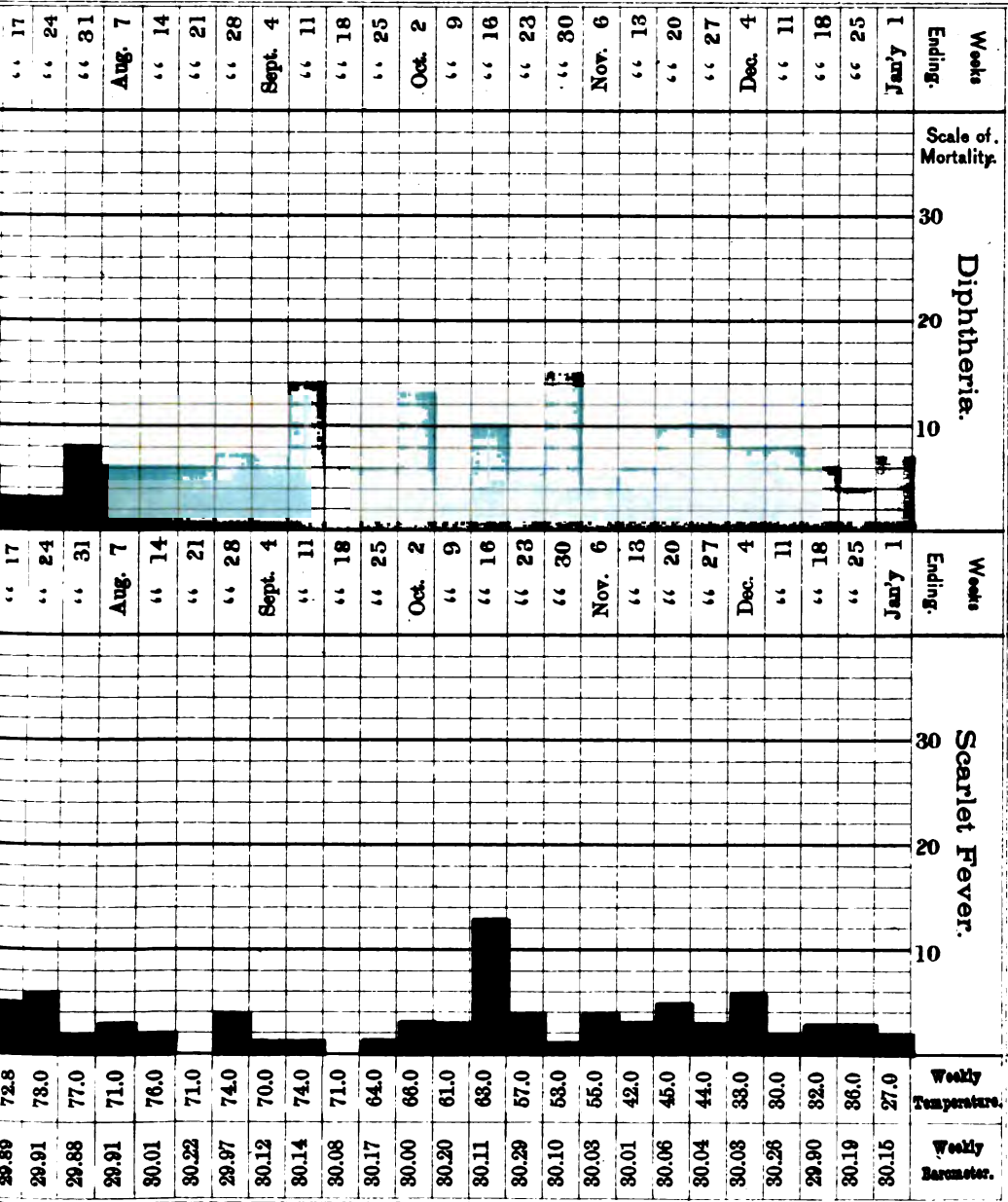


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# RT

and Scarlet Fever in Philadelphia for the year 1886.



HEALTH OFFICERS' REPORT.





The mortality of adults amounted to eleven thousand and thirteen (11,013), a decrease from the previous year of three hundred and nine (309), and the mortality of children eight thousand nine hundred and ninety-two (8,992), a decrease from the previous year of one thousand and seventy-eight (1,078).

The number born in the United States was fourteen thousand six hundred and seventy-two (14,672). Four thousand five hundred and thirty two (4,532) were of foreign birth, and eight hundred and one (801) whose nationalities were unknown.

*Abscess.*—The number of deaths so reported amounted to ninety (90), a decrease from the previous year of fourteen (14); sixty-five (65) were adults, and twenty-five (25) were children.

*Cancer.*—The number of deaths amounted to four hundred and fifty-six (456), a decrease from the previous year of thirty-one (21); see Table VIII for classification.

*Cerebro-Spinal Meningitis.*—The number of deaths so reported amounted to seventy-five (75), a decrease from the previous year of twelve (12); fourteen (14) were adults and sixty-one (61) were children; forty-three (43) were males, and thirty-two (32) females; twenty-nine (29) were under five years of age.

*Consumption of the Lungs.*—The number of deaths amounted to twenty-eight hundred and thirty-four (2,834), an increase over the previous year of thirteen (13); twenty-four hundred and eighty five (2,485) were adults, and three hundred and forty-nine (349) were children; eighteen hundred and sixty-nine (1,869) were natives of the United States, seven hundred and sixty (760) were of foreign births, and two hundred and five whose nativity was unknown.

The deaths in each month of the year were as follows:

January . . . . .	228	July . . . . .	180
February . . . . .	218	August . . . . .	249
March . . . . .	327	September . . . . .	176
April . . . . .	244	October . . . . .	232
May . . . . .	286	November . . . . .	223
June . . . . .	188	December . . . . .	283

The largest number of deaths occurred in the month of March,—three hundred and twenty-seven (327),—and the smallest number in the month of September,—one hundred and seventy-six (176).

The average deaths from this disease in each month, . . . . . 236.1

The average deaths from this disease in each week, . . . . . 54.5

The average deaths from this disease in each day, . . . . . 7.7

The number of deaths from consumption, of both sexes, for the past twenty-five years were as follows:

YEARS.	Males.	Females.	Total.
1862, . . . . .	961	988	1,949
1863, . . . . .	966	989	1,955
1864, . . . . .	1,087	1,002	1,289
1865, . . . . .	1,020	1,006	2,026
1866, . . . . .	994	950	1,944
1867, . . . . .	942	1,005	1,947
1868, . . . . .	1,000	995	1,995
1869, . . . . .	982	993	1,975
1870, . . . . .	1,118	1,190	2,308
1871, . . . . .	1,099	1,138	2,337
1872, . . . . .	1,167	1,163	2,330
1873, . . . . .	1,093	1,198	2,291
1874, . . . . .	1,133	1,171	2,304
1875, . . . . .	1,185	1,174	2,359
1876, . . . . .	1,288	1,388	2,676
1877, . . . . .	1,142	1,207	2,349
1878, . . . . .	1,154	1,337	2,491
1879, . . . . .	1,233	1,248	2,481
1880, . . . . .	1,325	1,367	2,692
1881, . . . . .	1,358	1,410	2,768
1882, . . . . .	1,382	1,427	2,809
1883, . . . . .	1,343	1,455	2,798
1884, . . . . .	1,395	1,406	2,801
1885, . . . . .	1,346	1,475	2,821
1886, . . . . .	1,468	1,366	2,834

*Cholera Infantum.*—The deaths amounted to six hundred and eighty-eight (688), a decrease from the previous year of two hundred and eighty-three (283).

*Diphtheria.*—The number of deaths were four hundred and eleven (411), a decrease from the previous year of one hundred and eighty-nine (189).

The following figures show the number of deaths from this disease for the past nineteen years :

YEARS.	Male adults.	Female adults.	Male children.	Female children.	DEATHS IN EACH QUARTER.				
					First.	Second.	Third.	Fourth.	Total.
1868, . . . . .	2	3	51	63	26	24	17	52	119
1869, . . . . .	3	5	75	99	42	48	37	55	182
1870, . . . . .	4	4	68	96	33	25	31	83	172
1871, . . . . .	3	3	71	68	48	32	29	36	145
1872, . . . . .	5	5	61	79	52	28	25	45	150
1873, . . . . .	1	2	56	51	45	25	17	23	110
1874, . . . . .	1	4	80	94	30	28	20	101	179
1875, . . . . .	6	7	314	325	116	158	142	236	652
1876, . . . . .	10	8	330	360	219	192	103	194	706
1877, . . . . .	6	7	182	263	120	97	84	157	458
1878, . . . . .	6	11	218	229	135	81	90	158	464
1879, . . . . .	6	5	141	169	130	57	46	88	321
1880, . . . . .	3	6	151	163	99	72	51	101	323
1881, . . . . .	3	8	214	232	84	83	100	190	457
1882, . . . . .	5	8	442	478	187	162	203	381	933
1883, . . . . .	1	9	511	485	267	218	230	291	1,206
1884, . . . . .	5	6	330	339	196	112	114	258	680
1885, . . . . .	3	10	282	305	204	120	111	165	600
1886, . . . . .	6	4	159	242	136	84	91	100	411

*Fever, Scarlet.*—The number of deaths amounted to two hundred and forty-eight (248), a decrease from the previous year of one hundred and twenty-seven (127).

The deaths in each month of the year were as follows:

January, . . . . .	25	July, . . . . .	19
February, . . . . .	20	August, . . . . .	16
March, . . . . .	40	September, . . . . .	5
April, . . . . .	35	October, . . . . .	11
May, . . . . .	32	November, . . . . .	15
June, . . . . .	20	December, . . . . .	16

*Whooping Cough.*—The number of deaths so reported amounted to eighty-five (85), a decrease from the previous year of forty-seven (47).

*Hydrophobia.*—The following figures show the deaths from the above disease since 1860:

1860, . . . . .	-	1874, . . . . .	3
1861, . . . . .	1	1875, . . . . .	2
1862, . . . . .	4	1876, . . . . .	4
1863, . . . . .	6	1877, . . . . .	4
1864, . . . . .	3	1878, . . . . .	2
1865, . . . . .	2	1879, . . . . .	3
1866, . . . . .	2	1880, . . . . .	1
1867, . . . . .	2	1881, . . . . .	5
1868, . . . . .	-	1882, . . . . .	2
1869, . . . . .	7	1883, . . . . .	3
1870, . . . . .	1	1884, . . . . .	-
1871, . . . . .	1	1885, . . . . .	-
1872, . . . . .	1	1886, . . . . .	-
1873, . . . . .	1		

*Inflammation of Lungs.*—The number of deaths amounted to one thousand four hundred and fifty-six (1,456), a decrease from the previous year of sixty-three (63); eight hundred and thirteen (813) were adults, and six hundred and forty-three were children; seven hundred and forty-two (742) were males and seven hundred and fourteen (714) were females.

*Old Age.*—Seven hundred and fifty-three (753) persons died of old age, of whom two hundred and seventy-nine (279) were between the age of seventy and eighty; three hundred and fifty-five (355) between the age of eighty and ninety; one hundred and two (102) between ninety and one hundred; six (6) between one hundred and one hundred and ten; and one (1) between one hundred and ten and one hundred and twenty.

*Poisoning.*—The number of deaths from accidental poisoning amounted to twenty-three (23), seven (7) less than those of the previous year.

Poisoning, . . . . .	1	Lead, . . . . .	4
Arsenic, . . . . .	1	Morphia, . . . . .	1
Carbolic Acid, . . . . .	1	Narcotic, . . . . .	2
Chloral, . . . . .	3	Opium, . . . . .	1
Laudanum, . . . . .	9	Strychnine, . . . . .	1

*Small-Pox.*—The number of deaths from this loathsome disease

amounted to four (4): they occurred in the months of November and December. The first death to occur in the city in sixteen months was that of a boy who came here from Brooklyn, N. Y., with the disease well developed upon him.

*Suicide.*—The number of deaths amounted to ninety (90), an increase over the previous year of twelve (12), of whom seventy-six (76) were males and fourteen (14) females; they were classified as follows:

Suicide, . . . . .	1	Muriatic acid, . . . . .	1
Arsenic, . . . . .	7	Opium, . . . . .	1
Carbolic acid, . . . . .	1	Paris green, . . . . .	1
Corrosive sublimate, . . . . .	1	Poison, . . . . .	1
Cutting throat, . . . . .	10	Railroad, . . . . .	1
Drowning, . . . . .	6	Rough on rats, . . . . .	2
Hanging, . . . . .	24	Shooting, . . . . .	23
Laudanum, . . . . .	4	Stabbing, . . . . .	1
Jumping from window, . . . . .	4	Sulphuric acid, . . . . .	1

*Sun Stroke.*—Of the nineteen (19) deaths so reported, fifteen (15) were males and four (4) females, a decrease from the previous year of seventy-seven (77).

TABLE XVI.—CHOLERA INFANTUM, JUNE, 1886.

*Deaths per diem, with Meteorological Observations, etc.*

Days of the month.	Deaths per diem.	THERMOMETER.			BAROMETER.	Rain, inches.	Prevailing winds
		Mean daily value.	Maximum.	Minimum.	Mean daily value.		
1		66.1	80	56	30.07		E.
2		69.1	79	59	29.99		S. W.
3	1	66.4	72	58	29.94	.04	W.
4	1	61.3	71	54	30.11		N. W.
5		65.9	78	56	30.04		S. W.
6		69.9	81	59	30.10		S. W.
7	1	68.1	78	61	30.07		S. W.
8		69.9	80	65	30.08		N.
9		67.6	81	60	29.92	.15	S.
10	1	71.1	84	61	29.72	.03	W.
11	3	73.9	83	66	29.89		E.
12		70.7	82	64	30.07		N.
13	3	72.0	86	61	29.99		S.
14	1	68.0	73	87		.76	E.
15	2	66.0	74	56	29.93		E.
16	1	71.0	80	63	29.83		S.
17	3	74.0	86	69	29.60	.5	S.
18	2	69.0	74	61	29.86		N. W.
19		64.0	76	58	30.12		N.
20	2	71.0	82	58	30.21		S.
21	2	72.0	82	61	30.24		S.
22	7	63.0	68	60	30.03	.39	S. E.
23	2	67.0	74	61	29.76	.34	S.
24	7	66.0	74	60	29.88		E.
25	4	69.0	81	62	29.85	.65	S. W.
26	3	71.0	80	62	29.84		W.
27	4	73.0	81	64	29.90		N. W.
28	7	68.0	77	62	30.01		N.
29	7	71.0	81	60	29.98		W.
30	4	68.0	73	64	30.13		S.

TABLE XVII.—CHOLERA INFANTUM, JULY, 1886.

*Deaths per diem, with Meteorological Observations, etc.*

Days of the month.	Deaths per diem.	THERMOMETER.			BAROMETER.	Rain inches.	Prevall- ing winds
		Mean daily value.	Maxi- mum.	Mini- mum.	Mean daily value.		
1	7	68.0	79	59	30.20		E.
2	7	65.0	72	61	30.07	.04	E.
3	8	76.0	90	63	30.03		N. W.
4	17	79.0	92	70	30.10		N.
5	9	77.0	92	67	30.17		E.
6	17	76.0	89	68	30.11		W.
7	13	80.0	90	70	29.93		S. W.
8	22	80.0	89	76	29.95		N.
9	18	74.0	85	69	29.98		E.
10	6	74.0	85	65	29.87	.55	S.
11	11	77.7	87	68	29.84		W.
12	19	69.0	79	62	29.94		E.
13	7	69.7	79	64	29.97		E.
14	13	69.0	78	66	29.86	.46	S. E.
15	9	74.3	83	67	29.82	.20	S.
16	7	78.0	81	65	29.86	.77	S.
17	5	77.0	88	68	29.93		N. W.
18	7	76.0	87	69	29.89	.11	S. W.
19	10	72.0	82	67	29.82	.14	N. W.
20	10	74.0	83	66	29.79		N.
21	5	69.0	75	64	29.80	.83	N.
22	6	75.0	86	63	29.88		S. W.
23	6	74.0	83	66	30.06	.15	N.
24	11	74.0	85	66	30.12		W.
25	12	70.0	78	66	30.01	.06	S.
26	12	75.0	88	67	29.85	.23	S.
27	3	76.0	84	70	29.77	.03	W.
28	6	79.0	89	69	29.84		N. W.
29	10	79.0	90	71	29.89		S. W.
30	8	83.0	94	73	29.89		S. W.
31	7	76.0	83	67	29.92	.6	W.

TABLE XVIII.—CHOLERA INFANTUM. AUGUST, 1886.  
*Deaths per diem, with Meteorological Observations, etc.*

Days of the month.	Deaths per diem.	THERMOMETER.			BAROMETER.		Rain, inches.	Prevail- ing winds
		Mean daily value.	Maxi- mum.	Mini- mum.	Mean daily value.			
1	3	76.0	80	73	29.81	.05	S.	
2	3	76.0	85	70	29.67		N. W.	
3	7	67.0	74	61	29.90		N. W.	
4	4	69.0	78	60	30.04		S. W.	
5	8	71.0	83	63	30.04		S. E.	
6	6	71.0	80	65	29.99	.01	S. E.	
7	5	66.0	68	64	29.91	.65	N.	
8	9	72.0	84	62	30.17		S. E.	
9	5	73.0	86	65	30.32		S.	
10	4	74.0	84	66	30.17		S. W.	
11	5	78.0	89	72	29.88		S. W.	
12	2	80.0	88	73	29.86		W.	
13	5	78.0	88	72	29.91		S.	
14	6	78.0	88	73	29.79	.03	W.	
15	4	73.0	83	65	30.03		N.	
16	8	73.0	82	65	29.92		S.	
17	10	77.0	84	70	29.89		N.	
18	9	68.0	72	65	30.09		N. E.	
19	7	70.0	81	61	30.23		N. E.	
20	6	69.0	78	61	30.29		E.	
21	2	65.0	79	57	30.20		E.	
22	1	68.0	81	56	29.99		E.	
23	1	69.0	77	63	29.92		S.	
24	7	72.0	82	64	29.94		E.	
25	3	76.0	86	66	30.00		N. E.	
26	3	77.0	87	70	30.03		N. W.	
27	8	79.0	91	69	29.97		W.	
28	3	79.0	91	72	29.90		S. W.	
29	3	80.0	92	72	29.86		S.	
30	2	76.0	82	71	29.76	.53	S. E.	
31	5	71.0	75	67	29.80	.11	W.	

TABLE XIX.—CHOLERA INFANTUM, SEPTEMBER, 1886.  
Deaths per diem, with Meteorological Observations, etc.

Days of the month.	Deaths per diem.	THERMOMETER.			BAROMETER.	Rain, inches.	Prevail- ing winds
		Mean daily value.	Maxi- mum.	Mini- mum.	Mean daily value.		
1	4	65.0	73	59	30.22	.0	N. W.
2	1	66.0	76	56	30.41	.0	E.
3	6	64.0	78	58	30.40	.0	N. W.
4	3	65.0	78	56	30.36	.0	N. E.
5	1	68.0	78	56	30.32	.0	E.
6	6	71.0	80	63	30.35	.0	E.
7	5	75.0	86	67	30.32	.0	S. E.
8	1	75.0	84	70	30.19	.0	S.
9	4	75.0	81	69	29.96	.05	E.
10	. . . . .	78.0	89	71	29.85	.0	W.
11	2	76.0	84	69	29.94	.0	W.
12	2	74.0	86	64	29.80	.64	S.
13	2	64.0	71	58	29.99	.0	W.
14	2	67.0	75	58	30.06	.0	S.
15	1	68.0	76	57	30.20	.01	S.
16	3	74.0	82	64	30.15	.31	S.
17	4	78.0	91	64	30.09	.0	S. W.
18	3	70.0	79	64	30.31	.0	N.
19	2	68.0	77	60	30.12	.04	S. W.
20	2	63.0	72	58	30.10	.0	N. W.
21	2	62.0	71	52	30.18	.0	N. W.
22	1	60.0	68	51	30.21	.0	S.
23	1	67.0	79	58	30.08	.11	W.
24	1	64.0	75	54	30.24	.0	S. E.
25	. . . . .	69.0	81	60	30.23	.0	S. W.
26	4	72.0	83	64	30.02	.01	S. W.
27	2	76.0	84	68	29.91	.0	S. W.
28	1	80.0	91	68	29.85	.0	S. W.
29	. . . . .	60.0	78	55	30.02	.03	N. W.
30	. . . . .	63.0	75	52	29.89	.0	N.



Showing a General Summary of Deaths, Male and Female, from Typhoid Fever, for the past Twenty-five Years.

YEARS.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1862,	23	12	24	12	22	13	22	8	23	10	25	14	68	16	109	17	34	14	44	18	37	16	36	12
1863,	28	8	22	10	32	13	37	17	11	12	13	7	37	10	28	9	30	12	24	16	29	11	49	20
1864,	27	18	23	12	36	21	26	16	25	19	20	18	35	14	69	27	38	18	40	25	25	23	39	32
1865,	37	39	37	32	51	40	47	36	30	29	37	31	32	23	43	35	32	27	17	27	32	21	20	19
1866,	20	14	16	13	14	18	8	14	7	8	9	12	14	8	34	24	21	21	27	25	16	13	16	9
1867,	19	16	8	7	11	15	22	10	17	17	15	9	19	18	13	17	23	18	21	18	9	13	12	15
1868,	14	17	10	13	15	16	13	14	7	13	19	12	15	26	22	21	23	23	11	16	15	23	20	17
1869,	20	12	11	9	18	18	9	12	23	18	12	16	11	18	23	24	19	9	21	15	13	10	13	19
1870,	13	10	12	15	33	21	16	8	26	21	22	17	21	18	27	27	18	19	10	6	7	11	13	8
1871,	17	16	8	7	11	14	10	6	18	14	12	9	9	11	15	16	13	16	19	9	13	14	14	14
1872,	14	12	15	10	19	13	11	12	11	36	13	11	20	20	21	16	20	18	20	14	17	6	20	10
1873,	17	17	7	4	24	13	11	5	17	11	16	13	20	12	18	12	12	18	23	17	21	13	24	19
1874,	24	20	17	22	18	14	15	21	17	16	22	11	14	15	17	18	27	20	23	28	18	19	23	22
1875,	19	18	16	14	21	20	13	8	25	26	24	14	10	15	24	27	21	17	15	21	19	11	27	26
1876,	21	15	16	21	22	23	26	9	25	26	24	20	25	25	67	42	47	47	45	43	32	32	45	56
1877,	45	23	12	12	10	14	16	19	15	14	20	21	38	22	33	25	34	26	29	29	12	16	21	25
1878,	15	19	12	20	12	16	16	19	15	14	14	12	11	12	38	20	19	20	21	20	12	14	13	20
1879,	17	23	13	12	18	14	13	12	15	12	10	12	14	10	20	10	12	16	17	14	14	17	19	10
1880,	21	13	15	17	17	21	27	14	18	16	12	9	22	18	35	45	21	10	15	23	15	20	44	28
1881,	16	16	13	17	17	17	27	20	20	18	10	12	17	22	56	34	43	35	53	33	38	47	46	21
1882,	35	25	36	20	31	24	47	32	43	33	35	22	17	11	29	23	25	24	24	24	31	14	31	22
1883,	28	29	19	22	36	27	25	21	26	21	16	15	18	25	28	33	26	29	36	31	18	19	19	20
1884,	57	84	23	21	32	27	32	33	26	25	25	15	13	16	28	30	36	36	27	36	35	29	31	17
1885,	10	25	42	30	32	29	15	10	15	9	15	9	22	27	37	27	49	29	34	27	25	17	23	28
1886,	16	26	20	22	25	29	26	19	26	22	18	15	16	16	41	39	37	31	27	35	18	29	33	22

TABLE XXXIV.—*The annual mean temperature in Philadelphia from 1800 to 1886, inclusive, with the annual amount of rain and snow, in inches, from 1825 to 1886.*

YEARS.	Mean annual tem- perature.	Rain, in inches.	YEARS.	Mean annual tem- perature.	Rain, in inches.
1800,	51.50		1844,	53.00	39.00
1801,	52.00		1845,	54.00	40.25
1802,	53.50		1846,	54.00	44.87
1803,	52.00		1847,	53.86	45.09
1804,	51.00		1848,	54.80	35.00
1805,	51.50		1849,	53.10	42.09
1806,	51.50		1850,	54.00	54.54
1807,	52.00		1851,	54.04	35.50
1808,	52.00		1852,	54.04	46.20
1809,	51.00		1853,	55.44	42.96
1810,	51.00		1854,	55.38	45.23
1811,	52.00		1855,	54.53	44.65
1812,	51.00		1856,	51.92	33.52
1813,	50.50		1857,	53.48	48.45
1814,	51.00		1858,	55.20	41.06
1815,	51.25		1859,	54.49	54.75
1816*,	49.00		1860,	54.12	45.40
1817,	52.50		1861,	54.71	45.41
1818,	53.00		1862,	53.58	45.66
1819,	51.00		1863,	54.13	49.64
1820,	51.75		1864,	54.60	46.73
1821,	51.50		1865,	55.77	53.64
1822,	53.00		1866,	54.90	43.57
1823,	53.50		1867,	53.41	62.93
1824,	53.75		1868,	52.83	50.18
1825,	54.00	29.30	1869,	54.23	44.16
1826,	53.00	40.00	1870,	56.44	43.56
1827,	50.00	39.50	1871,	54.91	45.98
1828,	54.00	38.50	1872†,	54.85	49.02
1829,	53.00	42.00	1873,	51.4	54.62
1830,	52.50	44.75	1874,	52.6	46.31
1831,	53.00	41.00	1875,	50.3	40.24
1832,	51.00	39.25	1876,	52.6	47.39
1833,	52.50	48.38	1877,	54.6	37.36
1834,	52.25	33.00	1878,	54.7	34.53
1835,	52.00	39.50	1879,	53.6	36.75
1836,	50.25	43.00	1880,	54.0	33.58
1837,	52.25	37.10	1881,	54.2	30.21
1838,	53.00	44.25	1882,	54.6	45.58
1839,	52.00	44.75	1883,	53.5	39.17
1840,	52.25	47.50	1884,	53.5	39.34
1841,	51.50	55.50	1885,	51.2	33.35
1842,	52.75	47.50	1886,	53.0	37.24
1843,	51.50	46.25			

\* Ice in every month; the coldest year on record in the city; the year without a summer.

† From this year observations taken at U. S. Signal Office used in this Department.

*Recapitulation of returns to this Department for past twenty-six years  
and six months.*

YEARS.	Births.	Marriages.	Deaths.
1860 (six months), . . . . .	8,434	2,310	6,342
1861, . . . . .	17,271	4,417	14,468
1862, . . . . .	14,741	4,652	15,097
1863, . . . . .	15,293	5,474	15,788
1864, . . . . .	15,591	6,752	17,582
1865, . . . . .	15,428	6,864	17,169
1866, . . . . .	17,437	7,087	16,803
1867, . . . . .	17,007	6,084	13,933
1868, . . . . .	17,259	6,371	14,693
1869, . . . . .	16,960	6,382	14,786
1870, . . . . .	17,194	6,421	16,750
1871, . . . . .	18,346	6,806	16,993
1872, . . . . .	20,072	6,496	20,544
1873, . . . . .	18,702	7,891	16,736
1874, . . . . .	19,387	6,639	16,315
1875, . . . . .	17,933	6,144	18,909
1876, . . . . .	18,695	5,341	18,892
1877, . . . . .	18,279	6,147	16,004
1878, . . . . .	18,346	6,247	15,743
1879, . . . . .	18,449	5,224	15,473
1880, . . . . .	19,388	6,476	17,711
1881, . . . . .	18,154	7,569	19,515
1882, . . . . .	20,098	8,521	20,059
1883, . . . . .	21,237	8,231	20,076
1884, . . . . .	22,160	8,637	19,999
1885, . . . . .	22,656	7,676	21,392
1886, . . . . .	23,221	5,215	20,005
Totals, . . . . .	387,738	173,084	457,777

The above statement shows a summary of all returns of births, marriages and deaths made to this Department since the act became operative, July 1, 1860. Since the year 1875 still-births, premature births and bodies brought to the city from other localities have not been included, thus showing since that year the actual deaths in the city.

Respectfully submitted.

M. VEALE,  
*Health Officer.*

Attest:

GEO. E. CHAMBERS,  
*Registrar.*

HEALTH OFFICE,  
PHILADELPHIA, *January 4, 1887.*

*To the President and Members of the Board of Health :*

GENTLEMEN: I have the honor to present the following report of the work of the nuisance inspectors for the year ending December 31, 1887:

The whole number of nuisances examined was . . . . .	12,557
Number dismissed, . . . . .	2,663
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Nuisances declared and notified, . . . . .	9,894
Referred to other departments, . . . . .	285
Removed by health officer without notice, . . . . .	1,235
Returned as abated by owners, . . . . .	6,505
Returned not complied with, . . . . .	1,706
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	9,731
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Pending action of owners, . . . . .	168

The above nuisances and causes thereof involved the examination of 17,352 different properties; the service of notice upon 9,413 different owners or agents, and 17,500 visits, not including examinations made by your chief inspector, nor the service of notice and bills upon parties residing at places other than where nuisances existed. Bills served, 2,007.

The causes of complaint were :

Privy wells, full, foul and leaky, . . . . .	5,039
Water-closets, defective, . . . . .	310
Underdrains, hydrants and pipes, . . . . .	1,037
Water and filth in cellars, . . . . .	1,873
Houses and rooms filthy, . . . . .	119
Defective surface drainage, . . . . .	936
Yards, courts and alleys filthy, . . . . .	917
Miscellaneous nuisances, . . . . .	2,326
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Total, . . . . .	12,557

Among the privy wells examined there were found leaking and overflowing, 575.

The bills served by inspectors show that there were cleaned by order of the health officer 359 privy wells, from which was taken 68,657 cubic feet of filth. This is an average of 191 cubic feet per well (and a fraction over).

There were also cleaned by other parties 3,109 wells; taking the same average as those cleaned by the health officer (which is low), there has been removed a total of 662,476 cubic feet of filth from 3,468 wells.

In addition to the foregoing there has been received and forwarded direct to the Department of Highways some 1,700 complaints relative to garbage, ashes, streets and inlets.

So numerous and so bitter had become these complaints that it was deemed unjust to this department that so many citizens should hold it responsible for that over which it had no control. And upwards of five hundred of these complaints have been answered by postal since July, 1886, as follows: "Your complaint against garbage collector has been forwarded to the chief commissioner of highways, to whom all such should be made, as this department has no control over that mat-

ter." This has caused a falling off of such complaints at this office, but the end is not yet.

There has also been received and consigned to the waste basket upwards of 1,500 anonymous communications.

With the leaking and overflowing wells, . . . . .	575
Might well be added the defective drains, etc., . . . . .	1,087
Water and filth in cellars, . . . . .	1,873
Defective surface drainage, . . . . .	936

And we have of soil-polluting nuisances, . . . . .	4,421
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And when we consider that the great bulk of this pollution is above cellar level, then only can we realize the necessity for its prompt removal.

Respectfully submitted.

S. H. MARTIN,  
*Chief Inspector.*

Principal Causes of Death in the City of Philadelphia from January 1, 1880, to January 1, 1887.  
Compiled for the State Board of Health by WILLIAM B. ATKINSON, M. D., Medical Inspector.

CAUSES OF DEATH.	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.	Adults.	Minors.	Total.	People of color.	NATIVITY.				
																									United States.	Foreign.	Unknown.		
Total deaths, . . . . .	10,160	9,845	4,657	4,385																	11,013	8,992	20,005						
Cerebro-spinal meningitis, . . . . .	43	82	35	26	12	8	14	11	15	6	7	2	2	3	2	2	2	2	2	2	14	61	75	4	69	6	1	6	
Cholera morbus, . . . . .	21	15	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	9	36	1	21	14	1	1	
Cholera infantum, . . . . .	848	845	848	845	988	94	5	1	1	1	1	1	1	1	1	1	1	1	1	1	88	688	688	40	681	89	8	8	
Diarrhoea, . . . . .	78	64	82	24	49	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	81	56	137	6	90	24	6	6	
Dysentery, . . . . .	88	57	10	8	10	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	52	18	70	3	41	24	6	6	
Diphtheria, . . . . .	165	245	159	242	38	86	176	86	5	6	2	2	2	2	2	2	2	2	2	2	10	401	411	2	400	10	1	1	
Erysipelas, . . . . .	885	815	884	813	49	145	842	108	8	3	3	3	3	3	3	3	3	3	3	3	102	119	221	22	178	87	6	6	
Congestion of lungs, . . . . .	115	106	62	67	78	15	17	6	1	5	10	20	18	12	22	16	8	1	1	1	86	647	650	11	640	10	1	1	
Consumption, . . . . .	429	436	428	407	608	109	82	22	8	6	18	8	4	3	8	12	34	8	8	8	35	880	895	56	882	11	2	2	
Disease of heart, . . . . .	878	896	66	43	22	8	8	21	80	29	39	53	102	117	162	122	84	8	8	8	661	108	769	57	450	273	46	46	
Inflammation of stomach and bowels, . . . . .	832	809	288	172	801	42	25	21	5	11	37	84	84	41	45	29	15	1	1	1	226	405	631	25	505	110	16	16	
Measles, . . . . .	10	9	10	9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	19	19	19	1	18	1	1	1	
Scarlet fever, . . . . .	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	4	4	4	4	4	4
Erysipelas, . . . . .	124	124	123	119	15	38	125	56	11	2	3	2	1	1	1	1	1	1	1	1	6	242	248	8	237	1	1	1	1
Pneumonia, . . . . .	742	714	814	839	288	151	110	41	25	33	120	137	153	124	147	97	51	1	1	1	818	648	1,456	101	1,022	874	60	60	
Typhoid fever, . . . . .	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	8	8	2	2	2	2	2
Typhoid fever, . . . . .	808	815	85	110	5	12	35	40	103	228	79	59	28	21	9	8	1	1	1	1	428	185	618	16	397	204	17	17	
Puerperal fever, . . . . .	10	7	8	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	1	28	2	18	20	1	1	
Remittent fever, . . . . .	454	377	447	370	692	84	27	10	8	1	1	1	1	1	1	1	1	1	1	1	4	18	17	1	14	8	1	1	
Marasmus, . . . . .	1,468	1,866	144	205	86	12	31	26	80	224	388	691	401	253	166	72	10	1	1	1	14	817	831	85	817	13	1	1	1
Phthisis pulmonalis, . . . . .	13	18	12	12	15	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2,485	849	2,484	185	1,869	760	305	305	
Tubercles mesenterici, . . . . .	255	172	24	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	893	84	427	26	262	188	27	27	
Bright's disease, . . . . .	81	11	3	46	52	16	12	4	1	1	1	1	1	1	1	1	1	1	1	1	89	8	42	1	27	14	1	1	
Diabetes, . . . . .	39	46	39	46	39	46	39	46	39	46	39	46	39	46	39	46	39	46	39	46	16	3	19	1	6	12	1	1	
Whooping cough, . . . . .	15	4	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	19	1	1	6	1	1	1
Struck, . . . . .	252	801	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	753	2	753	86	348	385	40	40	
Unknown, . . . . .	8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	8	2	5	5	4	1	1	1	

**Causes of Death in the City of Philadelphia, from January 1, 1886, to January 1, 1887.**

Reduced to a nosographical basis, from the report of the Registrar, for the State Board of Health, by WILLIAM B. ATKINSON, M. D.,  
Medical Inspector.

CAUSES OF DEATH.															
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	3 to 5.	5 to 10.	Adults.	Minors.	Total.	People of color.	NATIVITY.		
													United States.	Foreign.	Unknown.
All causes, . . . . .	10,160	9,645	4,657	4,385	870	847	723	806	910	2,605	8,515	111	8,006	445	64
Specified causes, . . . . .	9,792	9,774	4,651	4,381	870	847	723	806	910	2,605	8,515	111	8,006	445	64
Classes															
I—Zymotic diseases, . . . . .	1,726	1,739	1,377	1,378	870	847	723	806	910	2,605	8,515	111	8,006	445	64
II—Constitutional diseases, . . . . .	1,890	1,984	241	291	887	45	42	45	8,885	539	8,874	250	2,480	1,125	269
III—Local diseases, . . . . .	4,130	3,978	1,559	1,389	1,460	504	392	245	5,168	2,885	8,108	451	5,952	2,205	246
IV—Developmental diseases, . . . . .	1,091	1,267	743	607	1,177	108	84	88	1,008	1,850	2,858	97	1,791	511	56
V—Violent deaths, . . . . .	542	1,146	184	57	48	12	33	30	497	191	688	23	416	212	60
Orders															
I—1. Miasmatic diseases, . . . . .	1,643	1,731	1,256	1,516	296	844	721	806	822	2,572	8,394	107	2,986	415	43
2. Ethnetic diseases, . . . . .	26	14	18	12	28	8	2	...	10	80	40	...	87	2	1
3. Dietic diseases, . . . . .	56	24	2	1	...	...	...	...	78	3	80	4	32	28	30
4. Parasitic diseases, . . . . .	1	1	1	1	...	...	...	...	645	188	963	...	1	...	...
II—1. Diabetic diseases, . . . . .	388	600	70	60	72	21	10	15	845	185	2,891	205	1,926	767	68
2. Tubercular diseases, . . . . .	1,497	1,381	171	231	65	22	22	30	2,480	401	2,891	84	1,660	551	80
III—1. Diseases of nervous system, . . . . .	211	1,080	525	443	460	186	141	92	1,352	968	2,291	75	631	889	64
2. Diseases of organs of circulation, . . . . .	543	58	88	62	28	4	8	31	883	158	1,067	11	1,780	553	87
3. Diseases of respiratory organs, . . . . .	1,227	1,198	566	616	627	280	206	69	1,218	812	2,030	190	1,780	553	87
4. Diseases of digestive organs, . . . . .	618	618	322	223	356	44	28	31	786	512	1,291	47	885	354	42
5. Diseases of urinary organs, . . . . .	479	313	48	29	5	6	15	22	720	72	792	46	488	278	61
6. Diseases of generative organs, . . . . .	...	166	...	3	...	...	...	...	168	8	166	9	107	54	6
17. Diseases of organs of locomotion, . . . . .	...	6	1	...	...	...	...	...	18	1	14	...	5	8	1
8. Diseases of integumentary system, . . . . .	44	89	18	18	27	2	...	...	52	31	88	1	56	28	4
IV—1. Developmental diseases of children, . . . . .	189	116	139	116	240	11	2	...	18	253	255	4	255	...	...
2. Developmental diseases of adults, . . . . .	...	18	...	...	...	...	...	...	...	...	...	...	...	...	...
3. Developmental diseases of old people, . . . . .	253	601	...	...	...	...	...	...	753	36	718	36	848	245	40
4. Diseases of nutrition, . . . . .	700	832	604	491	937	92	32	31	237	1,095	1,893	87	1,173	143	16
V—1. Accident or negligence, . . . . .	177	75	72	44	89	10	18	17	194	116	292	13	169	65	18
2. Homicide, . . . . .	15	8	5	4	4	...	...	...	16	7	23	3	15	7	1
3. Suicide, . . . . .	75	14	...	...	...	...	...	...	90	...	90	...	144	80	12
4. Violent (not classed), . . . . .	476	59	59	9	5	3	15	15	293	46	328	6	188	106	24
Class															
I—Zymotic diseases, . . . . .	1,726	1,739	1,377	1,328	870	847	723	806	910	2,605	8,515	111	8,006	445	64
Order															
I—1. Miasmatic diseases, . . . . .	1,643	1,731	1,256	1,516	296	844	721	806	822	2,572	8,394	107	2,986	415	43

Class	Order	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483</
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## Causes of Death in the City of Philadelphia—Continued.

CAUSES OF DEATH.		Males.		Females.		Boys.		Girls.		Under 1 year.		1 to 2.		2 to 5.		5 to 10.		Adults.		Minors.		Total.		People of color.		NATIVITY.				
Order																										United States.	Foreign.	Unknown.		
2.	Diseases of organs of circulation,	518	543	98	63	25	4	8	8	31	933	128	1,085	75	631	389	66	75	631	128	1,085	75	631	389	66	75	631	389	66	75
	Pericarditis, . . . . .	31	32	6	8	2		2		4	49	14	68	2	35	24	4	35	49	14	68	2	35	24	4	35	49	14	68	2
	Aneurism, . . . . .	82	6	1							87	11	88	8	20	13	5	8	87	11	88	8	20	13	5	8	87	11	88	8
	Hypertrophy of heart,	18	13	8	1						22	9	31	1	21	10		1	22	9	31	1	21	10		1	22	9	31	1
	Embolism, . . . . .	2	3								4		5		1	3		1	4		5		1	3		1	4		5	1
3.	Heart disease, &c., . . . . .	460	479	75	58	22	4	5	27	27	831	128	949	64	554	889	66	554	831	128	949	64	554	889	66	554	831	128	949	64
	Diseases of respiratory organs,	1,227	1,198	586	616	677	250	206	206	69	1,318	1,202	2,420	190	1,780	553	87	1,900	1,318	1,202	2,420	190	1,780	553	87	1,900	1,318	1,202	2,420	190
	Laryngitis, . . . . .	35	28	28	27	4	15	81	5	5	114	837	441	43	874	65	2	1	114	837	441	43	874	65	2	1	114	837	441	43
	Bronchitis, . . . . .	188	253	146	181	225	51	44	4		22	4	26	4	16	8	2	4	22	4	26	4	16	8	2	4	22	4	26	4
	Pleurisy, . . . . .	19	7	4							818	618	1,044	104	1,022	874	60	1	818	618	1,044	104	1,022	874	60	1	818	618	1,044	104
	Pneumonia, . . . . .	742	714	314	329	288	151	110	41	1	84	2	86	2	12	23	1	1	84	2	86	2	12	23	1	1	84	2	86	2
	Asthma, . . . . .	23	13	2	2						3		3		29	1		3	3		3		29	1		3	3		3	1
	Asphyxia, . . . . .	19	11	17	10	27					224	144	368	56	267	80	21	2	224	144	368	56	267	80	21	2	224	144	368	56
4.	Lung disease, &c., . . . . .	201	167	77	67	88	31	19	18		736	515	1,251	47	885	354	42	1	736	515	1,251	47	885	354	42	1	736	515	1,251	47
	Diseases of digestive organs,	618	683	292	228	366	44	28	31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Pharyngitis, . . . . .	1																												
	Gastritis, . . . . .	322	309	238	172	301	42	28	21	8	226	405	681	25	905	110	16	16	226	405	681	25	905	110	16	16	226	405	681	25
	Peritonitis, . . . . .	82	149	35	24	8					183	49	231	11	143	78	13	8	183	49	231	11	143	78	13	8	183	49	231	11
	Acidities, . . . . .	9	9								18	18	18		8	8	2	2	18	18	18		8	8	2	2	18	18	18	
	Ulcer of Intestines, . . . . .	8	5	1							12	1	13		1	1	1	1	12	1	13		1	1	1	1	12	1	13	
	Hernia, . . . . .	9	19		1	1					27	7	28		14	13	1	1	27	7	28		14	13	1	1	27	7	28	
	Intussusception, . . . . .	16	11	6	2	8					19	8	27		18	9		2	19	8	27		18	9		2	19	8	27	
	Tamponade, . . . . .	21	24	13	12	24	1				20	25	45		81	12		2	20	25	45		81	12		2	20	25	45	
	Liver diseases, &c., . . . . .	180	89	9	8	9		2			202	17	219	7	102	109	8	7	202	17	219	7	102	109	8	7	202	17	219	7
	Spleen diseases, . . . . .																													
5.	Diseases of urinary organs,	21	17	5	3	5				1	80	8	88		25	13		25	80	8	88		25	13		25	80	8	88	
	Hepatitis, . . . . .	479	518	43	29	5	6	15	22	730	720	72	795	45	458	278	69	458	720	72	795	45	458	278	69	458	720	72	795	45
	Nephritis, . . . . .	69	81	8	10	1	2	7	4	102	102	18	120	7	67	40	18	67	102	18	120	7	67	40	18	67	102	18	120	7
	Bright's disease, . . . . .	235	173	24	10		1	4	14	393	393	84	477	26	293	186	27	293	393	84	477	26	293	186	27	293	393	84	477	26
	Diabetes, . . . . .	31	11	3							89	8	97		27	14		27	89	8	97		27	14		27	89	8	97	
	Cystitis, . . . . .	25	4								29		29		18	15		18	29		29		18	15		18	29		29	
	Kidney diseases, &c., . . . . .	35	16								48		48		37	14		37	48		48		37	14		37	48		48	
	Uremia, . . . . .	67	69	8	9	4	3	8	8	8	109	17	126	8	62	53	12	62	109	17	126	8	62	53	12	62	109	17	126	8
6.	Diseases of organs of generation,	1	1								168	8	168		107	54		107	168		168		107	54		107	168		168	
	Ovarian dropsy, . . . . .										1		1		1			1			1		1			1			1	
	Diseases of uterus, &c., . . . . .	165	165	8	8						162	8	168		106	51		106	162	8	168		106	51		106	162	8	168	

7. Diseases of organs of locomotion—														
Synovitis, . . . . .														
Joint diseases, . . . . .														
8. Diseases of interment, . . . . .														
Class IV—Developmental diseases, . . . . .														
Order 1. Developmental diseases, . . . . .														
Cynocela, . . . . .														
Spina bifida, . . . . .														
Teething, . . . . .														
Other malformations, . . . . .														
Trianus and tetanus, . . . . .														
2. Developmental diseases of adults—														
Child birth, . . . . .														
3. Developmental diseases of old age, . . . . .														
4. Diseases of nutrition, . . . . .														
Atrophy and debility, . . . . .														
Marasmus, . . . . .														
5. Violent deaths, . . . . .														
Class V—Violent deaths, . . . . .														
Order 1. Accident or negligence, . . . . .														
Fractures and contusions, . . . . .														
Wounds, &c., . . . . .														
Burns and scalds, . . . . .														
Poison, . . . . .														
Drowning, . . . . .														
Suffocation, &c., . . . . .														
2. Homicide, . . . . .														
3. Suicide, . . . . .														
Wounds, . . . . .														
Poison, . . . . .														
Drowning, . . . . .														
Hanging, . . . . .														
Otherwise, . . . . .														
4. Violent deaths (not classed, &c.), . . . . .														

#### IV. EXTRACTS FROM THE ANNUAL REPORT OF THE BOARD OF HEALTH OF THE CITY OF ALTOONA FOR THE YEAR 1886.

"A system of registration of marriages, births, and deaths and interments, as is required by the ordinance above referred to, was started on April 1, 1886, the following is a statement by months, according to the records of marriages, births and deaths and interments, occurring within the city up to December 31, 1886:

##### MARRIAGES, 1886.

April, . . . . .	12	October, . . . . .	12
May, . . . . .	12	November, . . . . .	15
June, . . . . .	17	December, . . . . .	16
July, . . . . .	8		
August, . . . . .	10	Total, . . . . .	114
September, . . . . .	12		

##### BIRTHS, 1886.

April, . . . . .	53	October, . . . . .	51
May, . . . . .	54	November, . . . . .	59
June, . . . . .	48	December, . . . . .	63
July, . . . . .	66		
August, . . . . .	48	Total, . . . . .	503
September, . . . . .	61		

##### DEATHS AND INTERMENTS, 1886.

April, . . . . .	36	October, . . . . .	32
May, . . . . .	28	November, . . . . .	25
June, . . . . .	19	December, . . . . .	22
July, . . . . .	33		
August, . . . . .	44	Total, . . . . .	260
September, . . . . .	21		

"The records of vital statistics not having been in operation the full year, it is difficult to draw any positive conclusions from them. The indications, however, seem to be, that the annual death rate will not be over sixteen or seventeen per thousand, which is very favorable.

"During the year there were two hundred and twenty-three nuisances abated on verbal orders of the sanitary policemen, and there were sixty-three which required action of the board; forty-four of which were abated; of the nineteen remaining, part of them were laid over for subsequent action to await the completion of sewers and for various reasons satisfactory to the board; a part of them were also cancelled upon subsequent information.

"An examination of the sources of the water supply was made, and, although they were not found to be entirely satisfactory an improvement was noticeable over last year, and a recent analysis of the water shows it to be in fair condition.

"The city has been rather unfortunate in the appearance of typhoid fever in our midst to some serious extent. Up to December 31, we have had reports from the physicians of the city of eighty-two cases, most of them occurring during the months of October, November and

December, and the largest percentage of these cases was in the Fifth and Sixth wards contiguous to the open sewers in that region. We are not prepared to say exactly what was the cause of so much of this sickness, but the very low condition, and perhaps the contamination, of the water supply, and the very filthy condition of some of the localities in which the disease occurred, undoubtedly contributed something to it.

"It is believed that the amount of money annually spent now in cleaning the sewer inlets and the amount spent in repairing sewers due to the washings from the gutters being carried into them would in a few years completely pave the gutters in the city. It is obvious that if the gutters were paved the cleaning of the sewer inlets and the filling of sewers with earth washed from the gutters would be entirely obviated.

"The open sewers within the limits of the city demand your immediate attention. To say the least, they are injurious and offensive in the extreme, and the health of the citizens living along these sewers is certainly endangered, especially in the hot dry season; and your board would recommend that covered sewers be put down as rapidly as possible in all parts of the city where there are open sewers. We would also again call your attention to the defective trapping at many of the sewer inlets of the city, which should have immediate correction.

"The supply of water is still insufficient to meet the demands of the city, and we hope your honorable bodies will take early and decided action in this matter with a view to providing a more plentiful supply.

"The matter of disposing of the city's sewage, we are aware, you now have under consideration. It is desirable to state, however, that a method of properly disposing of this sewage should, in the opinion of your board, be adopted at an early date, and we are inclined to urge action in this direction, to the end that conclusions may soon be reached of a satisfactory system."

Rule eight of the board of health was revised at the last meeting held and now reads as follows:

Rule VIII. Every undertaker or other person who may have charge of the funeral of any dead person, shall procure a properly filled out certificate from the attending physician of the death and its probable cause, in accordance with the form prescribed by the State Board of Health, and shall present the same to the president of the board of health, and obtain a burial or transit permit thereupon at least twenty-four hours before the time appointed for such funeral, and he shall not remove any dead body until such burial or transit permit shall have been procured.

**V. EXTRACTS FROM THE ANNUAL REPORT OF THE DEPARTMENT OF HEALTH OF THE CITY OF PITTSBURGH FOR THE YEAR 1886.**

*To the Board of Health :*

GENTLEMEN. The total number of deaths was 4,225, equal to an annual death-rate of 206 per 1,000 inhabitants. (Population, estimated, 205,000).

There were 1,176 deaths of infants, under one year, and 915 of children between the ages of one and five years, making 49.5 per cent. of the total mortality.

Of the decedents 1,094 were of foreign, and 3,131 of native birth. Of the latter number, 187 were colored.

Infectious diseases caused 837 deaths, equal to 19.8 per cent. of the total mortality, and 4 per 1,000 inhabitants.

Of those required by law to be reported, the statement is as follows :

DISEASES.	Cases reported.	Deaths.	Per cent.
Diphtheria, . . . . .	675	249	36.9
Small-pox, . . . . .	4	0	0
Scarlet fever, . . . . .	1,083	182	16.8
Typhoid fever, . . . . .	1,045	140	13.4
Cerebro-spinal fever, . . . . .	33	13	39.4

*Measles* prevailed most extensively during the autumn quarter of the year, causing a total mortality of 117, as against 46 for the previous year.

Thirteen of these deaths occurred in the old city, six in the east end and ninety-eight upon the south side. All of the decedents were under ten years of age.

*Whooping Cough* prevailed most extensively during the summer quarter. The mortality from this cause aggregated 109, as against 65 for the previous year, and was distributed as follows: old city, 42; east end, 30; south side, 36; in hospital, 1. The decedents were all under ten years of age.

*Diphtheria*.—There were reported during the year 675 cases of this disease, of which number 249 died, a mortality percentage of 36.9. The previous year the cases numbered 798, and the deaths 243; percentage, 30.4. It prevailed more extensively in the east end than during former years, the record being as follows: Old city, 59; east end, 116; south side, 72; in hospital, 1.

Of the deaths from this cause 60 occurred during the first or winter quarter, 33 during the second or spring quarter, 48 during the third or summer quarter, and 107 during the fourth or autumnal quarter.

Of the decedents from this cause, 10 were under one year of age, 163 between the ages of one and five, 57 from five to ten, and 19 were over ten years of age.

*Variola*.—During the latter half of the year, three cases of variola

were reported from the old city, and one from the east end, none of which terminated fatally.

*Scarlet Fever.*—There were 1,083 cases of this disease reported, of which number 182 died; the mortality percentage being 16.8. The death rate being about the same as for the previous year.

It prevailed most extensively in the east end, 596 cases and 93 deaths were reported from this district; 292 cases and 60 deaths were reported from the old city, and 194 cases and 30 deaths were reported from the south side.

Of the decedents, 9 were under one year of age, 113 from one to five, 51 from five to ten, and 9 were over ten years of age.

*Typhoid Fever.*—There were 1,045 cases of this disease reported, of which number 140 died, a mortality percentage of 13.4.

The death rate of this disease for the previous year was 15.5; 992 cases having been reported, with 154 deaths.

It prevailed most extensively upon the south side, 521 cases, with 68 deaths having been reported from this district; 241 cases, with 30 deaths were reported from the east end, and 212 cases, with 16 deaths were reported from the old city. The remaining 71 cases, with 26 deaths were reported from the various hospitals.

It caused 16 deaths during the first quarter, 14 deaths during the second, 65 during the third, and 45 during the fourth quarter.

Of the decedents from this cause, 10 were under ten years of age, 45 from ten to twenty, 55 from twenty to thirty, 18 from thirty to forty, 9 from forty to fifty, and 3 were over fifty years of age.

The mortality from the infectious diseases was located as follows :

DISTRICTS.	Population.	Deaths.	Rate per 1,000.
Old City, . . . . .	70,000	201	2.87
East End, . . . . .	79,000	286	3.61
South Side, . . . . .	56,000	317	5.66
Total, . . . . .	205,000	804	3.92

The remaining 33 deaths occurred in the hospitals. The above figures show that the highest death rate from infectious diseases occurred, as in previous years, upon the south side.

The per cent. of mortality from infectious diseases, of the total mortality of the district, was as follows :

DISTRICTS.	Total mortality.	Mortality— Infectious diseases.	Per cent.
Old City, . . . . .	1,255	201	16.0
East End, . . . . .	1,355	286	21.1
South Side, . . . . .	1,300	317	24.4
Total, . . . . .	3,910	804	20.5

The above figures show that in the old city, which contains 33,140 inhabitants to the square mile, one-sixth of all the deaths were due to infectious diseases; that in the east end, which contains 3,550 inhabitants to the square mile, one-fourth of the deaths were due to infectious diseases, and that on the south side, which contains 10,720 inhabitants to the square mile, considerably more than one-fourth of all the deaths were due to infectious diseases.

In addition to the above the principal causes of death were :

*Consumption*, which caused 372 deaths against 380 for the previous year.

The annexed statement exhibits the deaths from this cause, and the per cent. of the total mortality for the past fourteen years.

YEARS.	Deaths— Consumption.	Total mortality.	Per cent. total mortality.
1873, . . . . .	326	3,519	9.26
1874, . . . . .	331	3,381	9.79
1875, . . . . .	345	2,957	11.67
1876, . . . . .	341	2,896	11.77
1877, . . . . .	301	3,408	8.81
1878, . . . . .	315	3,068	10.27
1879, . . . . .	261	2,923	8.93
1880, . . . . .	314	3,165	9.92
1881, . . . . .	349	3,410	10.23
1882, . . . . .	316	*4,493	7.93
1883, . . . . .	353	3,318	10.64
1884, . . . . .	355	3,753	9.46
1885, . . . . .	380	3,840	9.90
1886, . . . . .	372	4,225	8.80
Total, . . . . .	4,659	48,356	9.63

\*Small-pox prevailed extensively during this year.

*Pneumonia* was credited with 418 deaths against 349 for the previous year.

It caused 106 deaths during the first or winter quarter, 112 during the spring quarter, 73 during the summer quarter, and 127 during the autumnal quarter.

Of the decedents 201 were under five years of age, 111 from five to fifty, and 106 were over fifty years of age.

*Bronchitis*, (acute and chronic, and bronchial catarrh), caused 143 deaths, against 125 for the previous year.

*Diarrhœal Diseases*, (including simple diarrhœa, 219; choleraic diarrhœa, 55; dysentery, 15; and cholera-morbus, 21,) a total of 310 deaths against 339 for the previous year.

*Violence*, (including R. R. injuries, 59; chronic alcoholism or intemperance, 37; burns and scalds, 28; drowning, 25; falls, 22; suicides, 23; homicides, 6, and various other forms of violence, including surgical operations, 103), making a total of 303 deaths against 292 for the previous year.

The annexed statement exhibits the death rate per 1,000 inhabitants in each of the three districts of the city.

DISTRICTS.*	Population.	Total mortality.	Death-rate per 1,000.
Old City, 1st to 12th ward, inclusive, . . .	70,000	1,255	17.93
East End, 13th to 23d ward, inclusive, . .	79,000	1,355	17.15
South side, 24th to 36th ward, inclusive, .	56,000	1,300	23.21
Total, . . . . .	205,000	3,900	19.10

\*Hospitals and Public Institutions are excluded from this statement.



## CLASSIFIED STATEMENT OF DEATHS FROM ALL CAUSES DURING THE YEAR, 1886.

CAUSES OF DEATH.	Total.	SEX.		AGE.													
		Males.	Females.	Under 1 year.	1.	2.	5.	10.	20.	30.	40.	50.	60.	70.	80.	90.	
Infectious, . . . . .	887	426	411	106	167	255	131	66	62	21	15	6	6	1	1	...	...
Constitutional, . . . . .	783	398	385	220	42	31	14	48	132	94	78	54	49	17	4	...	...
Nervous, . . . . .	427	226	201	178	45	25	15	13	14	14	13	34	41	29	6	...	...
Circulatory, . . . . .	153	80	73	25	...	1	3	10	11	19	22	24	21	15	2	...	...
Respiratory, . . . . .	665	353	312	178	99	69	11	22	29	43	27	35	73	61	17	1	...
Digestive, . . . . .	691	338	353	350	119	32	10	12	20	26	30	28	43	18	3	...	...
Urinary, . . . . .	120	73	47	2	1	5	5	5	10	14	16	21	28	9	4	...	...
Generative, . . . . .	46	...	46	...	...	...	...	3	16	21	6	...	...	...	...	...	...
Unclassified, . . . . .	198	98	105	98	1	...	...	...	1	...	1	1	4	48	41	8	...
Violence, . . . . .	803	231	72	19	5	17	14	35	52	63	44	26	21	3	2	2	...
Unknown, . . . . .	2	1	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Total, . . . . .	4,225	2,219	2,006	1,176	479	436	203	214	347	315	253	219	286	196	80	11	...

## SOCIAL RELATIONS.

Married, . . . . .	940
Single, . . . . .	2,870
Widows, . . . . .	240
Widowers, . . . . .	120
Not stated, . . . . .	55
Total, . . . . .	4,225

## NATIVITY.

Pittsburgh, . . . . .	2,471
Other parts of United States, . . . . .	642
Canada, . . . . .	9
England, . . . . .	102
France, . . . . .	4
Germany, . . . . .	467
Ireland, . . . . .	395
Italy, . . . . .	14
Scotland, . . . . .	20
Wales, . . . . .	40
Sweden, . . . . .	4
Poland, . . . . .	9
Switzerland, . . . . .	4
Russia, . . . . .	4
Austria, . . . . .	6
Belgium, . . . . .	2
Norway, . . . . .	1
China, . . . . .	2
Atlantic Ocean, . . . . .	4
Not stated, . . . . .	25
Total, . . . . .	4,225

## LOCATION OF DECEDENTS.

Old City, . . . . .	1,355
East End, . . . . .	1,255
South Side, . . . . .	1,300
West Penn Hospital, . . . . .	102
Mercy Hospital, . . . . .	66
Pittsburgh Infirmary, . . . . .	5
St. Francis Hospital, . . . . .	39
Homœopathic Hospital, . . . . .	54
Hospital for Incurables, . . . . .	2
Little Sisters of the Poor, . . . . .	16
St. Paul's Orphan Asylum, . . . . .	7
Home of Friendless, . . . . .	1
County Jail, . . . . .	1
Central Station, . . . . .	2
Found in Rivers, . . . . .	20
Total, . . . . .	4,225

## \*MARRIAGES.

There were reported to this office during the year, 1,723 marriages, equal to 8.4 per 1,000 inhabitants, and 186 less than for the previous year.

## \*BIRTHS.

There were reported to this office during the year, 5,949 births, equal to 29 per 1,000 inhabitants, and 274 more than for the previous year.

\*Incomplete.

The following statement exhibits the number, by months, of births, marriages, still-births and deaths occurring in the city of Pittsburgh during the year 1886 :

MONTHS.	Births.	Marriages.	Still-births.	Deaths.
January, . . . . .	504	102	34	321
February, . . . . .	495	98	30	275
March, . . . . .	513	102	36	351
April, . . . . .	419	134	32	288
May, . . . . .	397	174	18	293
June, . . . . .	561	145	25	408
July, . . . . .	490	127	26	495
August, . . . . .	515	129	30	433
September, . . . . .	542	106	35	303
October, . . . . .	510	216	19	333
November, . . . . .	513	185	29	369
December, . . . . .	490	145	19	356
Total, . . . . .	5,949	1,723	333	4,225

The following table shows the number of births, marriages and deaths, recorded in this department since its organization :

YEARS.	Births.	Marriages.	Deaths.
1852, . . . . .			*365
1853, . . . . .			898
1854, . . . . .			1,831
1855, . . . . .			1,000
1856, . . . . .			815
1857, . . . . .			943
1858, . . . . .			868
1859, . . . . .			820
1860, . . . . .			860
1861, . . . . .			948
1862, . . . . .			1,066
1863, . . . . .			998
1864, . . . . .			1,162
1865, . . . . .			999
1866, . . . . .			1,070
1867, . . . . .			1,042
1868, . . . . .			1,233
1869, . . . . .			1,477
1870 (New registration act), . . . . .	*1,750	*562	1,867
1871, . . . . .	2,886	1,059	2,531
1872, . . . . .	3,378	1,143	2,456
1873, . . . . .	5,175	1,782	3,519
1874, . . . . .	5,084	1,533	3,381
1875, . . . . .	4,930	1,192	2,957
1876, . . . . .	4,264	1,118	2,896
1877, . . . . .	4,215	1,110	3,408
1878, . . . . .	4,179	1,174	3,068
1879, . . . . .	4,449	1,290	2,923
1880, . . . . .	4,756	1,492	3,410
1881, . . . . .	4,197	1,782	4,493
1882, . . . . .	4,637	1,945	4,090
1883, . . . . .	5,513	2,224	3,318
1884, . . . . .	5,367	2,182	3,753
1885, . . . . .	5,675	1,909	3,840
1886, . . . . .	5,949	1,723	4,225
Total, . . . . .	76,404	25,220	74,550

\* Six months.

Respectfully submitted.

W. SNIVELY, M. D.,  
Registrar Vital Statistics.

## APPENDIX P.

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Complaints on which action was taken during the year 1886 :

1. Carlisle, Cumberland county.
2. Williamsport, Lycoming county.
3. Stroudsburg, Monroe county.
4. Monongahela River, Allegheny county.
5. Jenkintown, Montgomery county.
6. Chadd's Ford, Chester county.
7. Towanda, Bradford county.
8. West Manayunk, Montgomery county.
9. Doylestown, Bucks county.
10. Centralia, Columbia county.
11. Taylorville, Lackawanna county.
12. Newtown, Bucks county.
13. Altoona, Blair county.
14. Bedford, Bedford county.
15. Mount Oliver, Allegheny county.
16. West Newton, Westmoreland county.
17. Rosemont, Montgomery county.
18. Limerick, Montgomery county.
19. Braddock, Allegheny county.
20. Hulmeville, Bucks county.
21. Blairsville, Indiana county.
22. Monroeton, Bradford county.
23. New Castle, Lawrence county.
24. Eglesmere, Lycoming county.
25. Exeter and Wyoming, Luzerne county.
26. Bristol, Bucks county.

I. Complaint of foul cesspools on the grounds of the Cumberland county jail in the borough of Carlisle, made by a committee of the vestry of the adjoining church. Inspection by Benjamin Lee, M. D., secretary. Order for abatement.

II. Complaint of a foul livery stable in the city of Williamsport, made by A. Richter, M. D., health officer of Williamsport. Order for abatement.

III. Complaint of a foul water course at Stroudsburg, made by S. N. Miller, M. D., special medical inspector. Order for abatement.

IV. Complaint of bone-boiling establishments and schinderies on Beck's run, Allegheny county, polluting the water-supply of South Pittsburgh, made by Crosby Gray, Esq., health officer of Pittsburgh. Inspection by L. D. Hunter, Esq., inspector of the Allegheny district, and Benjamin Lee, M. D., secretary. Order for abatement.

V. Complaint of the pollution of a school well by drainage from a cesspool, made by the board of health of Jenkintown. Inspection by William B. Atkinson, M. D., medical inspector for the Delaware district.

VI. Complaint of overflowed land, producing malarial disease at Chadd's Ford, made by D. Henderson Hayward. Letter to owner of land followed by abatement.

VII. Complaint of the failure of the Towanda Water Works Company to furnish pure water, made by the borough council of Towanda. Inspection by Benjamin Lee, M. D., secretary, and E. D. Payne, M. D., medical inspector. Report made to borough council by the secretary, who also appeared as witness on the trial.

VIII. Complaint of the pollution of the drinking water of the city of Philadelphia, by manufacturing establishments on the banks of the Schuylkill river, at West Manayunk, made by the board of health of Philadelphia. Inspection by William B. Atkinson, M. D., medical inspector. Report on the whole favorable.

IX. Complaint of a bone-boiling establishment at Doylestown. Inspection by Wm. B. Atkinson, M. D., medical inspector. Improvements recommended and promised.

X. Complaint of defective drainage at Centralia. Order for abatement.

XI. Complaint of an offensive slaughterhouse at Taylorville. Order for abatement.

XII. Complaint of an offensive stable yard at Newtown, Bucks county. Order for abatement.

XII. Complaint of defective sewerage in the city of Altoona: made by the board of health of Altoona. Inspection by Dr. C. W. Dudley, medical inspector.

XIV. Complaint of unhygienic condition of portions of the Bedford county almshouse: made by the secretary of the Committee on Lunacy of the Board of State Charities. Inspection by R. Lowry Sibbet, M. D., medical inspector. Letters addressed to superintendent and directors suggesting improvements.

XV. Complaint of filthy cow stable and dairy at Mt. Oliver, Allegheny county. Inspection by L. H. Hunter, inspector. Building ordered to be taken down.

XVI. Complaint of an offensive slaughter-house at West Newton, Westmoreland county. Inspection by L. H. Hunter, inspector. Order for abatement.

XVII. Complaint of offensive slaughter-house at Rosemont, Montgomery county. Inspection by William B. Atkinson, M. D., medical inspector. Complaint not sustained.

XVIII. Complaint of a bone-boiling establishment at Limerick, Montgomery county. Inspection by William B. Atkinson, M. D., medical inspector. Complaint ignored.

XIX. Complaint of bone-boiling and fat-rendering establishments and slaughter-houses at Braddock, Allegheny county, producing pollution of the Monongahela river: made by the borough council of

Braddock. Inspection by L. H. Hunter, inspector, and Benjamin Lee, secretary. Orders for abatement to eight different establishments.

XX. Complaint of offensive fat-rendering establishment at Hulmeville : made by S. E. Snowden. Inspection by William B. Atkinson, M. D., medical inspector. Order for abatement.

XXI. Complaint of defective drainage at Blairsville, Indiana county. Inspection by Dr. J. R. Rutledge, showing that the borough authorities were taking the necessary steps to improve the condition.

XXII. Complaint of pollution of Towanda Creek, by a tannery at Monroeton, Bradford county, made by W. C. Hull, M. D. Inspection by E. D. Payne, M. D., medical inspector.

XXIII. Complaint of defective drainage at New Castle, Lawrence county. Inspection made by L. H. Hunter, inspector. Letter of advice sent to borough council of New Castle.

XXIV. Complaint of unhygienic conditions in hotel at Eaglesmere, Lycoming county, resulting in supposed case of typhoid fever. Inspection by E. D. Payne, M. D., medical inspector. Letter of advice sent.

XXV. Complaint of overflowed lands at Exeter and Wyoming, Luzerne county, owing to mine drainage, producing malarial disease, made by Dr. O. P. Knapp and councils of boroughs. Inspection by Dr. David Engelman, member of the Board. Order for abatement.

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## ERRATA.

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- Page 12, line 24, for "seems" read "seem."  
Page 23, line 30, for "59,838" read "598,339."  
Page 34, line 28, before the word "tallow" insert "of a."  
Page 44, line 4, for "Tibbet" read "Sibbet."  
Page 49, line 21, fill blank with the figures "\$2,198.77."  
Page 49, line 33, for "\$152.56" read "\$790.47."  
Page 50, line 19, for "1887" read "1888."  
Page 86, line 26, for "this" read "the."

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